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ARMY AUTOMATION

AUTOMATIC DATA PROCESSING EQUIPMENT OPERATIONS MANAGEMENT

HEADQUARTERS, DEPARTMENT OF THE ARMY
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TECHNICAL BULLETIN
No. 18–107

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC. *3 February 1986*

ARMY AUTOMATION AUTOMATIC DATA PROCESSING EQUIPMENT OPERATIONS MANAGEMENT

REPORTING OF ERRORS

The proponent agency of this bulletin is the US Army Information Systems Software Support Command. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commander, US Army Information Systems Software Support Command, ATTN: ASB-TEE-MR, Fort Belvoir, Virginia 22060-5456.

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***This bulletin supersedes chapters 2, 5, 6, 7, 10, 11, 13 and 14; AR 18-7; Army Information and Data Systems Data Processing Installation Management Guide; May 1978.**

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Summary. This technical bulletin establishes management standards and prescribes procedures to manage Automatic Data Processing Equipment (ADPE) at Army data processing installations (DPI)s, data processing activities (DPA)s and other organizations operating ADPE.

Applicability. This bulletin applies to the Active Army, the Army National Guard, and the US Army Reserve. It does not apply to those activities of Army staff or major Army commands that have ADPE or telecommunication systems or equipment whose function, operation, or use–

a. Involves intelligence activities.
b. Involves cryptologic activities related to national security
c. Involves the direct command and control of military forces.
d. Involves equipment that is an integral part of a weapon or weapons system.
e. Is solely for research, development, engineering, equipment testing, or process control.
f. Is critical to the direct fulfillment of military or intelligence missions.

Impact on New Manning System. This bulletin does not contain information that affects the New manning System.

Interim changes. Interim changes to this bulletin are not official unless they are authenticated by The Adjutant General. Users will destroy interim changes on their expiration dates unless sooner superseded or rescinded.

Suggested improvements. The proponent agency of this bulletin is the US Information Systems Software Support Command. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commander, US Army Information Systems Software Support Command, ATTN: ASB-TEE-MR, Fort Belvoir, VA 22060-5456.

CHAPTER 1
INTRODUCTION

1-1. Purpose. This bulletin implements certain provisions of AR 11-2, and provides guidance for the use of general purpose automatic data processing equipment (ADPE). This bulletin establishes management standards and prescribes procedures to manage computer operations at Army data processing installations (DPI) and other organizations operating ADPE.

1-2. References. Required and related publications and related forms are listed in appendix A. HQDA Points of Contact for ADP Management related subjects is listed in appendix B.

1-3. Explanation of abbreviations and terms. Abbreviations and special terms used in this bulletin are explained in the glossary.

1-4. Objectives. The following are objectives for this bulletin:

a. Provide automation managers with basic guidance on the varied aspects of automatic data processing (ADP) operations.

b. Provide management and staff in functional areas with an understanding of sound management practice concerning the operating ADPE.

c. Aid in training new personnel assigned to operating ADPE.

1-5. Updates. Commander, US Army Information Systems Software Support Command (USISSSC) responsible for—

a. Developing and maintaining this bulletin.

b. Evaluating and providing direction to Army Staff (ARSTAF) and Major Army Command (MACOM) Automation Management Office (AMO), approval or disapproval of requests for waivers from the provision of this bulletin.

1-6. Training. Commander, US Army Training and Doctrine Command (TRADOC) should incorporate the policies and procedures in this bulletin into the standard course of ADP study for officers and for enlisted personnel in the 74 Military Occupation Specialty (MOS).

1-7. Operational.

a. ARSTAF and MACOM AMOs in their area should:

(1) Monitor and ensure compliance with the provisions of this bulletin.

(2) Grant waivers to subordinate elements, when appropriate, or seeking guidance from Commander USAISSSC, Technical Evaluation and Standards Directorate, ATTN: ASB-TEE-MR, Fort Belvoir, VA 22060-5456.

(3) Provide supplemental instructions to subordinate elements to meet local requirements, as required. Copies of supplements will be forwarded to Commander, USAISSSC, Technical Evaluation and Standards Directorate, ATTN: ASB-TEE-MR, Fort Belvoir, VA 22060-5456, within 15 days of the effective date of the supplement.

1-8. Activities.

a. Army activities operating ADPE are responsible for compliance with the provisions of this bulletin.

b. Program manager and project managers or officers for ADPE systems acquisition are responsible for—

(1) Ensuring the provisions of this bulletin are included in all new Army contracts or plans for system acquisition.

(2) Including, to the maximum degree feasible, the provisions of this bulletin in modifications to existing contracts and plans for ADPE systems acquisition.

1-9. Waivers. Requests for a waiver from any provision of this bulletin will be submitted in writing through the ARSTAF or MACOM AMO. AMOs will, when granting waivers, furnish one copy of the waiver, the original request, and the supporting documentation to: Commander, USAISSSC, Technical Evaluation and Standards Directorate, ATTN: ASB-TEE-MR, Fort Belvoir, VA 22060-5456. Documentation should reach USAISSSC on or before the effective date of the approval.

CHAPTER 2
AUTOMATIC DATA PROCESSING (ADP) MANAGEMENT

2-1. Management.

a. ADP management concept.

(1) The size, mission, and capabilities of activities employing ADPE can vary from a very large service center operation, to the use of micro processors in functional areas. While size and capability differ, the management responsibility for ADPE resources does not. Managers must ensure that ADP resources are used efficiently and effectively to support the mission. Automation managers must determine the level of control necessary for their situation, but must not ignore the fact that all assets must be protected. Commanders will develop and maintain systems of internal control to safeguard assets, ensure compliance with applicable regulations, and improve performance.

(2) Controls must be implemented to—

(a) Prevent computer-related crime.

(b) Eliminate unauthorized use of ADPE.

(c) Prevent the improper use of or access to ADP information and functional data.

(d) Ensure resources are used in an efficient and effective manner.

(e) Ensure that any augmentation or replacement of ADPE is adequately planned.

b. Characteristics of management control. As a minimum, all ADP managers must ensure that the following controls are used:

(1) Standing operating procedures (SOP) are developed and followed that document practices and systems of control.

(2) To the maximum extent possible, the principle of separation of duties is followed to provide a check against the fraudulent use of resources.

(3) Lines of control are established which clearly state duties and approval authorities, and these organizational structures are thoroughly described in the organization's internal control documentation.

(4) An effective system of internal review is established to ensure that adequate management controls are in place and are being adhered to.

(5) Performance is monitored.

(6) Adequate short- and long-range plans for improving service and performance exist.

c. Control of ADPE in a functional user's area. In activities where ADPE is located in the functional user's area, those practices in b above may already be established within the organization. It is not necessary to maintain separate controls for ADP; however, managers must ensure that compliance with applicable regulations and policy directives is monitored, regardless of whether ADPE is centrally located in a DPI or located in the functional users' area.

d. ADP managers. Installation AMOs will ensure that ADP managers become familiar with all DA 18 series publications and AR 380-380.

2-2. Data control.

a. The data control function is an important aspect of separation of duties. It produces an auditable record of data as if it is routed through the various stages of processing. This concept is important in a service center operation, but it also applies in network environments and distributed systems.

b. As a minimum, the following controls must be used:

(1) In batch systems, all input material should be routed through a data control function. A schedule should be maintained that projects workload and arrival times of inputs. As data is received, the schedule serves as a checklist as well as an aid to expedite input from users. Management should be notified of significant irregularities in arrival time or expected volume. A log should be maintained that identifies data, the operation requested, day and time in, day and time due out, and the actual volume. Input material should be checked for completeness for format. A routing checklist should be prepared that traces the data through the various stages of processing and remains with the data until a total package is ready for processing. The routing checklist becomes an audit trail in the event of error. The quality of output products must be assured through procedures which check that products are legible and in proper format; expected products have been produced; and that classified products are handled appropriately. Output should be logged when released to recipient.

(2) On-line transaction-oriented batch system should use automated summary reports to record receipt of data. The control of output products in (1) above applies.

(3) Systems employing on-line query and update should also produce an auditable record of events for managers to ensure the integrity of data and products. Where practical, system logs may be used as an audit trail of events.

(4) Procedures that account for classified products must be used, regardless of the machine size that produced the document. Sensitive data requires special care to ensure the proper disposal of sensitive waste material. Receipt of sensitive data should be acknowledged by signature or initials, as appropriate.

(5) The output control area will maintain records of authorized recipients of sensitive material, and will verify identities prior to the release of sensitive material.

(6) Sensitive unclassified data, subject to the provisions of the Privacy Act of 1974, requires special consideration. Each DPI manager must establish reasonable administrative, technical, and physical safeguards to assure that records are disclosed only to those who are authorized to have access and otherwise to protect against any anticipated threats or hazards to their security or integrity which would result in substantial harm, embarrassment, inconvenience, or unfairness or any individual on whom information is maintained. AR 380-380, Appendix L, further defines implementation of the Privacy Act.

(7) DA Form 200 (Transmittal Record) will be used to control ADP products other than magnetic tape, mailed or otherwise shipped to recipients outside the organization.

c. Where applicable, two systems console logs can be an effective audit trail that documents events that act on and affect data. The console log also provides valuable insight into operational difficulty, and whether operations procedures are being followed. Console logs should be used as working documents to audit performance and guide management action. AR 380-380 provides guidance on console logs for systems processing classified data.

d. Short-term back up to protect against localized or temporary loss of data and long-term back-up for disaster recovery, performance review, statistical reporting or audit should be included as a standing operating procedure. This requirement is most often included in the activities Continuity of Operations Plan (COOP). (See DA PAM 18-130.) Special consideration must be given to backing up office automation or office decision support systems where the normal audit trail of paper documentation in the form of letters, memos, and disposition forms has been replaced by electrical transmissions resulting in temporary storage of information for review on video display units. When the automated data system (ADS) supporting such office automation and decision support processes has not provided for a permanent or semipermanent record of events, decisions, and authorities, consideration must be given to backing up temporary system storage through the use of disk dumps to magnetic tape or diskette prior to the data being automatically purged.

2–3. Personnel control. Data processing personnel are among the manager's most valuable assets. No organization can function without a trained staff, dedicated to achieving the mission. Controls over the selection and efforts toward retention of trustworthy people for sensitive ADP positions are essential.

a. AR 380-380 defines which positions in the organization are ADP sensitive and provides guidance on programs to control selection and retention. All organizations which operate ADPE will institute a personnel security and surety program as defined in AR 380-380 to guide in the retention of personnel designated as ADP sensitive.

b. Managers will use an organizational training program to minimize security and data processing problems, and thereby ensure the integrity of data and information. Standard procedures and guidance contained in DA PAM 18-220 will be followed.

(1) Each DPI will develop and maintain a continuing program to train both military and civilian personnel. The objective should be to get the best use of the DPI workforce and prevent problems that may arise due to improper practices. The organization must develop and publish a training plan that defines short- and mid-range goals and includes actions to meet those goals. The DPI will maintain a training file for each employee that contains the employee's current individual development plan and a record of training attended.

(2) In activities other than DPIs, managers will ensure the specialized requirements of ADP management and operations are included in the organization's training plan.

(3) Each activity will maintain a technical library with ADP reference documents and ADP training material which may be used by employees for self-improvement.

c. Technical personnel such as programmers or specialists should not be used as the routine

point of contact for scheduling of ADPE products or services and should not be involved in ADPE operations. This separation will ensure that those with the technical knowledge necessary to defeat design features that ensure data integrity and auditability will not be placed in a position to overcome these safeguards.

2-4. Property control. ADP managers must develop and ensure the use of procedures to protect ADPE assets. To achieve that end—

a. ADP managers must develop procedure to ensure equipment is used only by authorized users and for only official purposes.

b. All ADPE should appear on the appropriate property book and be hand-receipted or sub-hand-receipted to the user or custodian of the ADPE.

c. All ADPE must be properly reported according to instructions contained in AR 18-3.

2-5. Command relationships of service center type DPI.

a. The DPI should be established to interact with each functional staff element equally and to ensure that a focal point for each command automation function is designated.

b. A consolidated or service center-oriented DPI will be located in the organizational structure so as to ensure that it is independent of all functional ADP users. The DPI manager should act as the representative of the organization commander for operational ADP matters, which includes the allocation of ADP resources and priorities to multiple users.

c. The DPI functions ordinarily as a service facility in support of other elements of the organization or command, which depend on the ADP support for performance of their assigned mission. DPI personnel must recognize this pivotal service role. They must continually take into account the legitimate needs of the ADPE users for the proper amount and quality of ADP support.

(1) User involvement in planning and forecasting. To the maximum extent feasible, users of ADP services will routinely be allowed to help plan the ADP work schedule on both a long- and short-term basis.

(2) Coordination with users. Prior to undertaking any action that may affect current or planned level of services to any user, DPI managers or their representatives will coordinate with the user to determine the potential impact on the user's mission performance. Normally, priority or scheduling conflicts between users, which cannot be resolved by the DPI manager, will be resolved by a representative of the organization commander.

(3) Users group. A users group should be formed, consisting of a representative from each principal element supported by the DPI. This group will serve as the vehicle for making users needs known to the AMO and DPI manager, and should provide input to the AMO in developing command ADP policy and plans. The users should elect a chairman from among the group and devise their own charter and rules.

CHAPTER 3
AUTOMATIC DATA PROCESSING EQUIPMENT (ADPE) OPERATIONS MANAGEMENT

3-1. General. This chapter provides basic guidance on managing computer operations to assure accomplishing of user requirements and efficiently using ADPE. The ADP manager will establish procedures for continuous monitoring of key indicators of operations performance to meet these objectives.

3-2. Performance record keeping and review.

a. The manager will maintain adequate records of ADPE inventory and performance for local management control purposes and for preparation of reports to higher headquarters. These records will provide the capability for—

(1) Scheduling workloads, developing operational standards, and planning future applications.

(2) Computing monthly rental and maintenance charges and projecting future expenditures for budgetary planning purposes.

(3) Ensuring that the equipment is being maintained in operational condition in accordance with available standards prescribed for each device.

(4) Ensuring that ADP resources are being used for approved applications.

b. Records will also be maintained in conjunction with functional users to permit the determination of cost benefits accruing from the use of ADP products in accordance with, and to satisfy the requirements of AR 335-15.

c. The following types of operational records will be maintained—

(1) Production records that relate to user satisfaction. These include, for example: Terminal response time, jobs completed, delinquent jobs, backlog statistics, and reruns.

(2) Maintenance records for all ADPE to indicate reliability (e.g., type and number of malfunctions, mean time between failures, and amount of downtime).

(3) Internal ADPE log data that indicate effectiveness of hardware and executive and applications software.

(4) External ADPE log data (when available) that show use of time categories and job statistics.

(5) Information identifying specific operational problem areas (e.g., types of abnormal job terminations).

3-3. Production control and scheduling. Production control will ensure that processing of ADP jobs proceeds in a planned and orderly manner to meet user requirements and to get the most out of hardware and other resource usage. Production control includes scheduling, input/output (I/O) control, and internal workflow control, all of which directly influence the ability of the DPI to support its users promptly and satisfactorily. The following are considered the minimum requirements for an efficient production control system—

a. Production forecasting. DPI workload should be planned at least one month in advance through forecasting procedures.

(1) Coordination. Contact with all users of ADP resources having a significant impact on DPI workload should be made by means of an ADP users' group and will consider the following needs—

(a) Cyclic requirements for routine operation of application's systems.

(b) Special requirements that are known or anticipated; e.g., monthly or quarterly runs, one-time jobs, or work done as required.

(c) Interrelationships between jobs or requirements of different users that will dictate run sequences.

(d) Required job delivery dates and times. Care should be taken to ensure that these requirements are consistent with smooth workflow and availability of input data, giving enough leadtime for processing.

(e) Need for on-line terminal support at specified periods. Heavy use of on-line systems will generally restrict ability to run batch jobs concurrently.

(2) DPI internal recurring requirements. The DPI will need planned access to the ADPE for the following internal requirements, which should be integrated into the workload forecast:

(a) Time for developmental work (program compilation and testing and support for modifications to executive software)., Normally, time should be set aside for overnight processing of developmental jobs, plus time allocated during the prime shift for accelerated turnaround while programmers are available.

(b) Preventive maintenance and planned ADPE modifications.

(c) DPI management systems (e.g., magnetic media inventory, ADP product register, automated schedules).

(3) Processing plans for projected workload. Based on analysis of the anticipated users workload requirements submitted to their supporting DPI and based on their time-phasing, a processing plan for the succeeding month should be developed. This plan should be distributed to all supported functional activities and internally to DPI operating elements for their own planning purposes. The plan should also include coordinated due-in or cut-off times for input to the planned jobs.

(4) Pre-coordination. Prior to publication of the processing plan, the expected workload by day should be reviewed to isolate significant peaks and valleys. For this reason, it is important that users provide the DPI advance notification of all known recurring and special requirements and the leeway possible in scheduling these. For optimum use of DPI personnel and ADPE resources, workload should be redistributed through coordination with the users to permit generally constant levels of processing from day to day.

(5) Priorities. User coordination should establish relative processing priorities between application's systems and a job within each system, to provide a basis for later schedule change when ADP resources are constrained. Developmental work should also have a set priority, since workflow is necessary to keep high grade systems' personnel profitably employed and to continue to progress in an application's system development.

b. Daily schedules. Short-range scheduling of DPI operational workload will be made by means of daily schedules prepared on the basis of the monthly processing plan and actual performance.

(1) A formal procedure will be established by means of an SOP for development of the daily schedule. This SOP should include a procedure for comparison of planned workload shown in the monthly processing plan and actual performance evidenced by release of completed jobs from the DPI, with the addition of information on canceled work, backlogs, and necessary reruns.

(2) Actual runtime performance statistics by job should be collected from console logs and utilization records, the statistics should be analyzed for use, so as to project more accurate time requirements into the daily schedule.

(3) The scheduling SOP should include provisions for changing the priority or sequence of jobs to be run, and should specify by duty title the individuals authorized to make the changes. Lower priority jobs deferred by higher priority work should be subject to mandatory priority upgrading after a certain period of deferral.

c. Production monitoring. A single point in the DPI, normally the scheduler, should be responsible for monitoring the status of work in the DPI and for conforming with the schedule, and for providing necessary status reports to DPI management for action.

(1) The scheduler should be kept continuously informed by I/O control and operations of the following:

(a) Jobs scheduled, but not ready for processing on time.

(b) Jobs canceled by the customer.

(c) Backlogs in-house.

(d) Jobs requiring rescheduling for rerun.

(e) Jobs completed successfully.

(2) DPI management should conduct a daily or more frequent review and evaluation of the status of production in order to direct corrective action and coordinate with users.

(3) The status of production review should be based upon workload status reports provided by the scheduler. These reports should include the following—

(a) Significant jobs completed during reporting period.

(b) Significant production problems (e.g., reruns, user dissatisfaction with production, and inability to perform internal DPI work).

(c) Recommendations for corrective action (e.g., rescheduling, adjustment of due-in or due-out times).

(d) Amount of work received that was not forecast.

(4) As stated, a single point of contact should provide production status. Once an application has been released for production, it should be routinely scheduled and operated without programer involvement (separation of duties). Continued involvement is an indication of poorly designed or documented software.

d. Scheduling in a multiprogramming environment. Many computers now in Army use allow concurrent processing of multiple jobs. Optimum scheduling under these conditions requires collection of information related to computer processing efficiencies and job re-

quirements. The following are additional scheduling related factors applicable to a multiprogramming environment:

(1) Partitioning of computer memory. Establishment of number and sizes of computer internal memory partitions, regions, or task initiators is directly related to throughput efficiency and should be evaluated by computer performance measurement techniques.

(2) Balancing the system. External channel or peripheral device configuration is also directly related to throughput efficiency. In multiprogramming and multiprocessing modes of operation, the ability of the computer to transfer data between central processing unit (CPU) and peripheral devices for different jobs in process becomes a major constraint in throughput efficiency and must also be evaluated by computer performance measurement techniques.

(3) Categorization of jobs by memory and peripheral requirements. In a multiprogramming environment, optimum job mix is facilitated by preliminary job categorization in terms of hardware requirements, so that the sequence of loading jobs in the work queue may take advantage of all devices available and avoid device contention (e.g., use of HASP or other automated software).

(4) Product mix. A further categorization of jobs into "CPU bound" or "peripheral I/O bound" should be made, where applicable, based on the predominant requirements for these resources during execution. Jobs of the same class would not be expected to run efficiently together.

3–4. Conversion of data into machine readable media. Managers will ensure efficient conversion of input information into machine-readable media. The following policies apply to data conversion:

a. Data conversion task (e.g., operation of data entry equipment, correction and validation of input) will be decentralized to the functional user to the maximum extent. Personnel costs associated with functional activity will be included in the ADP budget, in accordance with the requirement of AR 37-100-FY. Cost of associated data conversion equipment and ADP supplies will be included in the ADP budget.

b. Usage statistics will be maintained by all users of data conversion equipment. Managers will periodically review these statistics in order to monitor and control the efficiency of equipment use.

3–5. Computer operations.

a. Open shop computer room

(1) A DPI is functioning in an open shop mode when—

(a) Individual programmers may personally operate a computer to test and debug programs.

(b) Individual programmers may be present in a computer room to observe program operation and provide direct instructions to the operators for change of programs or procedures during operation.

(2) Except in DPA or computer operations section (e.g., standalone computers, calculators, intended for user operation) the type of open shop operation described in (1)(a) above will not be permitted, for reasons of security and efficiency of ADP operations.

(3) The type of open shop operation described in (1)(b) above generally should be permitted only for system recovery under rare emergency conditions.

b. Closed shop computer room.

(1) A DPI is functioning as a closed shop when—

(a) Access to the computer room is limited and controlled.

(b) Only operating personnel (i.e., computer operators, shift leader) are permitted in the computer room. Other personnel such as customers, programmers, analysts, and administrative personnel are permitted entrance on an exception basis.

(2) The closed shop is the accepted method of computer room operations at Army DPIs.

(3) Waivers, authorizing open shop operation of DPIs, may be granted by ARSTAF/MACOM/Installation AMOs where DPI physical and system security is not jeopardized, or physical or economic limitation of the computer room preclude closed shop operation (e.g., terminal sites, minicomputer sites).

c. Documentation and manuals.

(1) Manufacturers' operating manuals will be kept available in the computer room for each item of ADPE used. If ADPE is not located in a computer room, the operating manuals will be kept in a location immediately accessible to the ADPE operator.

(2) Where applicable current versions of appropriate computer operation manuals de-

veloped under DA PAM 18-211 will be available in the computer room during the operation of each application program or system.

d. Console logs.

(1) Console logs document the overall occurrence of events from the time of system startup or initiation. The information contained in console logs provides insight into computer efficiency and the causes of operational difficulty. Console logs should be used as working documents to guide appropriate management action. The following management-related information is available from console logs, either directly or indirectly, in conjunction with other tools:

(a) Variances from standard operating practices that may relate to efficiency, correctness of run, or security.

(b) Information useful to determine processing trends and scheduling requirements.

(c) Causes of processing problems and abnormal job terminations.

(d) Defiencies in ADPE use.

(2) One copy of all console logs should be retained in the operations area for at least 90 days for historical and reference purposes. Multiple copies of console logs may be produced, if desired. The console logs should be regularly reviewed by the operations manager, the systems programmer, the scheduler, quality assurance personnel, and others in the DPI who are assigned responsibilities for fault analysis and correction.

(3) Console logs for classified processing will comply with guidance provided in AR 380-380.

e. Operating procedures. The operations manager will establish SOPs to cover the following, as a minimum—

(1) Establishment and modification of internal job processing priorities.

(2) Authorization for physical access to the computer room by non-operations personnel.

(3) Review of console logs, maintenance reports, and similar control documents for fault analysis and correction.

(4) Procedures for handling abnormal conditions, such as abnormal terminations, machine malfunctions, reruns, emergency shutdowns, and system failures.

(5) Shift turnover procedures and instructions.

(6) System initialization.

(7) Procedures to record and monitor temperature and humidity when manufacturers' specifications set limits on these factors.

(8) Procedures that establish and delegate responsibilities for handling and protecting sensitive material, to include the following:

(a) Maintaining accountability records.

(b) Reporting security violations.

(c) Marking classified reports and storage media.

(d) Processing classified data.

(e) Distributing classified reports.

(f) Declassification of data and storage media.

(9) Use of and interface with communications support facility.

f. Facilities. All personnel should be familiar with—

(1) The location and use of fire extinguishers.

(2) Emergency power-on and power-off procedures.

(3) Emergency procedures for initiating a fire alarm and notifying proper authorities.

(4) Evacuation routes and procedures.

(5) Procedures to deactivate water sprinkler systems.

g. Operator responsibility. The operator of any ADPE is responsible for—

(1) Familiarization with the manufacturers' operating manuals and special supervisory or equipment use instructions.

(2) The correct operation of equipment.

(3) Any preventive maintenance or user cleaning of equipment that is specified by the manufacturer or equipment custodian.

(4) DPI or functional area housekeeping, as specified.

(5) Conservation of ADP supplies.

(6) Protection of data by proper handling of magnetic storage media.

3-6. Computer performance evaluation.

a. For top performance, thereby conserving resources and avoiding unnecessary expenditures, performance of the computer must be tracked and evaluated.

b. Using hardware and software measurement tools, the computer performance evaluation (CPE) specialist is able to measure component use over a period of time and determine on the relative efficiencies of the hardware, executive software, applications software, and operational procedures. To make sound decisions and to document requirements, the ADP manager needs the facts on the current

efficiency of their ADPE. Information derived from CPE can be used to answer the following questions—

(1) Can you increase the workload by making applications programs more efficient?

(2) Do you need to plan for an equipment upgrade?

(3) Do you need additional components such as more memory, additional disk space, more communication ports?

(4) Can you eliminate some leased components or replace them at lower cost?

(5) Can you improve response time?

c. Problem symptoms that would indicate the need for intensive evaluation using hardware and software monitors in addition to those furnished by the manufacturer are:

(1) Complaints of poor on-line response time, which are or can be verified.

(2) Failure to process required workload due to lengthy run times.

(3) System accounting data indicating CPU time use of 50 percent or more.

d. Plans for performance improvement rely not only on a knowledge of the degree of efficiency of your ADPE, but also on precise knowledge of the processing requirements. Simply stated, "user service," whether that provided by a DPI or that ADP support provided to the manager's functional area, must be quantified. The various types of service, both on-line, software development, and research and development, each presents special demands on the system. The user of a batch system associates good service with timely and accurate reports. Accurate in the sense that no operational procedure has destroyed the integrity of the data base or the report. The on-line terminal operator associates good service with rapid response time (the time between when the transit command is given to the terminal and when the terminal has received a response from the CPU) and system availability. Software applications development personnel require large amounts of computer capacity for testing software routines. Service is judged on availability of resources, rapid turnaround of batch submissions, and on-line response. It should be noted that batch processing should not be confused with card-oriented systems. Batch also refers to any job that is not interactive, a job that once initiated, perhaps from a terminal, runs to its end point without interaction from the terminal user. The ADP manager must understand and quantify the types and amount of service support that is provided by the ADPE. Once support is quantified, the manager should profile the workload by time and try to maximize throughout by efficient scheduling of workload. Scheduling is considerably easier to control in the batch environment than in an on-line demand type terminal environment. The manager should use any operating system facility available that imposes quotas on the amount of resources available to terminal users. Often, the manager will find application developers running large batch program compilations in contention with high priority inquiries or production data base activity. By restricting some activity to certain times, the manager will be more in control of the ADP environment. To improve service by analyzing usage deals with terminal response time, a graph may be drawn to show a normal workday. Typically, two large peaks are formed at 1000 and 1400, separated by no activity around the lunch hour. The answer to the problem of poor response could simply be to arrange for flexible work schedules of application developers which encourages a staggered arrival, lunch, and departure time.

e. Once the equipment and schedule have been improved, plans for service through hardware acquisition can begin. Hardware planning includes overall use of system components. The components usage statistics gathered during high equipment use can be used with the workload forecast (determined during scheduling optimization) as indicators for more hardware. Hardware plans use the data collected during CPE accounting of component usage to detect requirement trends.

(1) Optional Form (OF) 65 (ADP Transcript Sheet) is a coding form that will accept 25 records that are 80 characters long. This form may be used to code program source statements and large numbers of input records.

(2) DA Form 2632 (Miscellaneous Code Layout for Keypunching) is a single, 80-character record coding form cut to the same dimensions as a standard Hollerith tabulating card. This form should be limited to coding small numbers of input records. This form can be obtained from The Adjutant General publications center.

f. The use of keypunch machines will be permitted subject to justification. Nonclerical personnel should not be allowed to perform substantial amounts of keypunching or other data conversion tasks. One card punch machine may be allowed for each machine room where punched cards are used as input media on a convenience basis, without other formal justifica-

tion, when it is to be used for emergency card correction and similar internal purposes.

g. USAISSSC (ASB-TEE) provides CPE services Army-wide, using both hardware and software monitors. The DA CPE program is further described in DA PAM 18-127.

3–7. ADPE maintenance. Users of ADP resources must be assured of reliable services; consequently, the manager must maintain ADPE in fully operable and dependable condition. Maintenance contracts for particular systems or items of ADPE may contain provisions or definitions that differ from this pamphlet. In that event, the particular contracts should be adhered to. This pamphlet does not prohibit more comprehensive provisions or definitions in current or future maintenance contracts. Continued review of maintenance related statistics (e.g., downtime and meantime between failures (MTBF)), maintenance practices, and expenditures is required to improve ADPE operations and avoid unnecessary costs. For common maintenance classification and definitions, see the glossary.

3–8. Maintenance of Government owned ADPE.

a. All ADPE will be covered by provisions for preventive maintenance (PM) and remedial maintenance (RM) throughout normally scheduled periods of usage, to ensure that the ADPE is kept in good operating condition. The following are potential maintenance sources:

(1) Original equipment manufacturer (OEM).

(2) Other commercial companies that are established to provide maintenance services (non-OEM or third-party).

(3) In-house (Government employees, military or civilian).

b. Under DA PAM 18-100, managers, except field tactical units, are required by regulation to conduct periodic economic analysis of all available sources of maintenance for Government-owned ADPE to ensure adequate service at least cost. In addition to pure service costs, the anticipated responsiveness of the maintenance source in terms of on-call travel time and spare parts availability will be balanced against the requirement for uptime in connection with the DPI's assigned support mission. Resident on-site maintenance field engineers (FE) will be authorized only in remote areas or DPIs with the most critical uptime requirements.

c. When commercial organizations provide PM and RM, a contract will be drawn that stipulates the following—

(1) Principal period of maintenance (PPM), which can be designated by the manager, and the maximum allowable vendor response time to requests for service. Liquidated damages for failure to meet this response time criterion may be included. Usually, the PPM is a nine-hour period each day Monday through Friday. The contract should allow the flexibility of changing the selected periods after giving adequate notice to the contractor.

(2) Extended period of maintenance (EPM), which can be obtained generally at per call rates for periods outside the PPM where needed (e.g., nights and weekends), and the maximum allowable vendor response time to requests for service. Penalties for failure to meet this response time criterion will be specified. Extra charges for RM service during this period will also be specified, if appropriate. The contract will, if possible, also stipulate that DA Forms 4614-R (ADPE Malfunction Record) and 4614-1-R (Addendum to ADPE Malfunction Record) jointly completed by the ADPE operator and vendor representative, will be used as the vendor's authority for billing extra maintenance charges.

(3) Preventive maintenance schedule, which can be designated by the manager to be at any time within the PPM. The activity will contractually require each vendor of maintenance (for both government-owned and leased ADPE) to submit, as a deliverable item, documentation explaining the PM procedures and requirements for each type of equipment to be maintained.

(4) When contracting for maintenance services from third party sources, the contract will have a clause requiring the maintenance vendor (contractor), upon contract expiration or termination, to have the equipment inspected by the OEM and certified to be at, or brought to, an acceptable level of maintenance.

d. Van-mounted or deployable ADP systems will be principally supported by an adequate number or properly trained, military maintenance personnel, fully capable of providing all necessary maintenance service in field environments. ADPE maintained by in-house engineers may also be covered by a backup contract from commercial sources to provide additional or emergency maintenance services. Commercial or civilian employee maintenance sources

should not be used in lieu of military personnel for van-mounted or deployable ADP systems assigned to mobile ADP units; but they may be used to augment military sources. An adequate spare parts supply, as determined by the Project Manager, will be maintained on hand at all times by mobile ADP units.

3–9. Maintenance of leased ADPE. ADPE leased contracts will include maintenance services. These services will be specified in the contract to provide the manager the flexibility in provisions for maintenance necessary to meet mission requirements, and to allow penalties to the contractor in terms of rental credits covering any periods when the ADPE is inoperative. Contracts will also include provisions for mechanical replacement of items of leased ADPE that do not meet specified criteria of operational use time versus downtime.

3–10. Preventive maintenance. Whether ADPE is leased or purchased, fully adequate PM is important to maximize equipment uptime. PM will be scheduled for times that least interfere with scheduled ADPE operational commitments.

a. The minimum amount of PM required should not be the same for ADPE at all DPIs. The manager must determine according to local conditions how much is needed. Variables to be considered in establishing PM includes—

(1) OEM general recommendations for the ADPE configuration.

(2) Amount of operational use time.

(3) Quality of physical environment.

(4) Provision of downtime to uptime.

b. A written PM schedule will be initiated and maintained by the DPI for each item of ADPE under its responsibility, including decentralized equipment. PM schedules will be established in accordance with terms and conditions of the applicable lease or maintenance contract, and updated as necessary. PM schedules will be formally agreed on and signed by the DPI managers (or their representative) and the vendor representative. Written PM schedules for PCM are optional, but should be based on the local conditions noted in a above.

c. The PM schedule for each machine or configuration will also include a checklist of the appropriate PM procedures to be performed. The schedule will be developed from the PM specifications provided by the vendor according to the contract.

3–11. Remedial maintenance. The manager will monitor the MTBF and number of RM service calls to determine if the PM service schedule and scope should be adjusted or if a request for mechanical replacement of leased ADPE is warranted.

a. Procedures will be established to provide guidance on steps to follow in the event of ADPE malfunction. These procedures will be kept readily available in ADPE operating areas. These steps will normally include immediate operator corrective actions, supervisory intervention, and means of obtaining RM service when necessary.

b. ADPE operations personnel will be kept familiar with the terms of maintenance contracts with regard to the types of maintenance provided (e.g., content of PM program, principal period of maintenance, maximum response time allowed, etc.)

c. Maintenance contracts generally stipulate that calls for RM service outside the PPM or EPM will be made at extra charge to the Government. Accordingly, a review of the need for the immediate return of a device to operational status must be made when malfunction occurs outside the PPM or EPM. When methods are not available to overcome the device nonavailability, and critical processing requirements demand its return to operational status, service calls should be made immediately. Otherwise, service calls should be deferred to the next PPM.

3–12. ADPE maintenance and downtime records. Maintenance contracts for leased and government-owned ADPE are executed to ensure the equipment is fully operational when needed. Normally, these contracts provide for extra charges to the Government when RM services are required outside of PPM and at other specified times; and conversely, they provide for accumulation of credits from the vendor when the ADPE is not quickly returned to operating condition. The contracts for leased equipment will also contain provisions for mechanical replacement when the ADPE fails to perform according to specified criteria. Regular PM of proper scope and duration is intended to keep equipment downtime to a minimum. Accordingly, the following records will be maintained:

a. PM. Times and duration that ADPE are actually turned over to the maintenance engineer will be collected and reported in the ADPE utilization system. Also, the PM checklist required by paragraph 3–10c for each item of equipment

will be kept with the equipment and initiated by the maintenance engineer during each appropriate PM period. This is to ensure that the schedule and scope of required PM are carried out.

b. RM. DA Forms 4614-R and 4614-1-R Record, or similar locally developed records will be used each time that remedial maintenance on an item of equipment is required. These records will provide a history of malfunctions and their causes so as to document what remedial steps were taken. The DPI should establish a procedure for the formal review by management of these malfunction records. When remedial action is necessary, the manager will refer the problem to the contracting officer. When ADPE is moved for reuse within the Army, current malfunction records and other maintenance related records will be transferred with the equipment. Such records often facilitate help with initiation or renewal of maintenance contracts.

CHAPTER 4
ADP RECORDS AND MAGNETIC STORAGE MEDIA MANAGEMENT

4–1. General. This chapter provides guidance on the management of ADP records and the magnetic media used to store them in conjunction with data processing. The data comprising these records is normally critical to the mission performance of the activity supported by the ADPE. It is a key responsibility of the ADPE manager to maintain this data accurately, safeguard the physical security of this data, and ensure it is readily available when needed. Also, the costs associated with the magnetic media and related devices may constitute a significant proportion of ADP expenses. The managers are therefore, also responsible for maintaining an economic level of these resources to the degree that it does not conflict with their mission of providing responsive and accurate service to users.

4–2. ADP records management requirements. An ADP record is a collection of related items of data treated as a unit in machine-readable form. Ordinarily, ADP records are grouped into files or data-sets, which are collections of related machine-readable records treated as a unit. These files will generally be stored on magnetic media. Files are controlled through set procedures. The objectives of ADP records management are to ensure efficient and economic ADP operations by establishing standards for proper maintenance, storage, and disposition of machine-readable records, and to review these record-keeping practices on a continuing basis to find opportunities for improvement. The following basic requirements apply to ADP records management in the Army:

a. A current file-by-file inventory of machine-readable records will be maintained that will enable the operator and ADPE user to identify and locate any file or dataset version held.

b. Each ADP file will be documented to describe its contents in terms of individual records, data elements, processing specifications, and output products.

c. To govern the disposition of ADP files when no longer needed by the ADPE operator or functional users, specifications for retention of each ADP file in machine readable form will be developed. These specifications will, as a minimum, be documented in DA Form 4737-R; and are subject to records management approval, prior to authentication of the users' manual. (See AR 340-18-17.)

(1) For each new ADP file, the developer will make the following documentation available to the responsible installation/agency records management officer at least 30 days before expected processing or system implementation:

(a) Completed DA Form 4737-R (File Specifications).

(b) Completed DA Form 4738-R (Record Specifications).

(c) Sections 1 and 2 of the associated users' manual (to include the ADSM cover page). When necessary, the system developer will supply technical information for inclusion, but the writing style must be appropriate for the users of the system.

(2) For each revised data system, a completed DA Form 4752 (Program Revision) will be made available to the responsible installation or agency records management officer at least 30 days before expected processing. For records management purposes, a system will be considered revised only if system changes—

(a) Alter a previously approved file retention schedule.

(b) Affect the nature of information retained, so as to render previous documentation invalid.

(3) When a new or revised system will be adversely affected due to nonreceipt of HQDA (DAAG-AMR-P) approval, deployment (excluding erasure or disposal of master files) may proceed. In these instances, disposal of current, superseded, or duplicate master files will not take place prior to receipt of HQDA approval.

d. Where appropriate, those ADP files determined by The Adjutant General to be of historical value will be offered to the Archivist of the United States when no longer needed for mission requirements. Other ADP files will be approved for systematic disposal or erasure by HQDA (DAAG-AMR-P).

e. ADP files will be safeguarded by proper identification, storage, and handling techniques and, whenever appropriate for reconstruction purposes, will be copied; the copies will be stored in a safe location away from the ADPE operations center, DPI, or functional ADPE user.

4–3. Magnetic files storage facilities.

a. As used in this pamphlet, magnetic files storage facilities include libraries, storage areas, and rehabilitation areas where remov-

able magnetic media (tape, disks, cassettes, etc.) are stored and handled. This does not include operational areas where the files are created or used. The term "disk" includes all types of removable disk-like magnetic media (e.g., disk packs (including Winchester type packs), floppy disks, diskettes, magnetic cards with plastic backing, etc.).

b. Magnetic files storage areas must be kept very clean at all times. The cleanliness of equipment cabinets, floors and nearby areas, and the control of temperature and humidity are essential. Cleanliness, temperature and humidity are the most important factors related to tape and disk errors. If storage temperature of recorded tape exceeds 90 degrees F, or 80 degrees F wet bulb, performance may be affected due to distortion of the tape backing or adhesion of adjacent tape layers.

c. Since the contents of the data files are very valuable, often of greater value than the ADPE itself, the manager must provide adequate physical protection to magnetic media. They must also be well protected from fire.

d. Depending on the value and sensitivity of the records being stored, it may be appropriate to construct a vault to safeguard them adequately against fire and unauthorized access or damage. Prior to construction, plans must be made for design and size. Vault storage capacity must be sufficient for future growth and storage requirements. Consider comparable installations and determine requirements based on an analysis of operating and planned ADP systems for number of file volumes needed, processing frequencies, retention periods, and number of work tapes and disk packs needed for efficient usage.

e. The computer room will not be used as a magnetic files storage area. Only those data tapes required for the current shift of operation may be kept in the computer room, along with no more than one day's supply of work (scratch) tapes. A small number of frequently used disk packs may be kept in the computer room, but they must be stored in metal cabinets. Mobile systems that provide limited storage are authorized to store magnetic files in the computer room when no other space is available.

f. Under no circumstances will magnetic tapes and disks be stored outside the magnetic files storage area (except as noted in e above). The practice of releasing tapes and disks to individual programmers or users for retention cannot be condoned, because it exposes these tapes to a significantly higher damage threat from handling, contaminants and temperature and humidity fluctuations. Library controls and procedures (see para 4-4) must be of a high standard to ensure that tape and other magnetic files being used by programmers are not destroyed before they are no longer needed.

g. Access should be restricted to those personnel who must have access to perform their required functions. The library should be kept locked when the librarian or media custodian is not in the immediate area.

h. Entries to the library should be located near supported ADPE.

4–4. Magnetic media library procedures. A magnetic media library must be efficiently operated for effective use of the computer system and the protection of ADP. The library management system requirements of a DPI operating multiple large-scale computers will be much more demanding than that of an activity using standalone computer systems, but certain information and management practices are contained in numerous automated tape management systems and are recommended for those DPI that can justify their use.

a. The following items are requirements for which separate procedures and records are necessary to ensure management and control of magnetic media and data files. These items may be in the format and grouping that will best suit the needs of the DPI.

(1) Basic control record for each separate item of magnetic media (excluding such items as floppy disks and cassettes used for data preparation and not for file retention).

(a) DPI or activity identification.

(b) Reel or pack number.

(c) Physical characteristics (as required; e.g., length, width, hub size, number of disk surfaces, compatible drive).

(d) Recording density.

(e) Security classification (highest recorded since last degaussing, see AR 380-380).

(f) Acquisition date.

(g) Usage record.

(h) Error and retry reports.

(i) Current file or data-set name.

(j) File volume number.

(k) File as-of-date.

(l) File creation date.

(m) File retention period or purge (scratch) date.

(n) File classification and protection requirements, if lower than overall classification of media, includes privacy data indication, if appropriate.

(2) A record, by reel or pack number, of media showing the date and type of rehabilitation procedure given.

(3) Inventory accountability, based on at least a semi-annual physical inventory reconciliation (for unclassified media), with transactional updates as they occur. This list will reflect the inventory of the library and location of each item, and must include the following categories:

(a) On hand in the library. When replacement orders have been placed, the approximate due-in date will be recorded for planning of future requirements.

(b) Temporarily inactive for cleaning and rehabilitation.

(c) Shipped out for use at another activity or location apart from main library (includes alternate files storage area). Specific location must be shown. Based on this information, follow up action should be taken to ensure that items sent to other activities, which management expects to be returned, are returned on time.

(d) Awaiting other disposition.

(4) Procedures will be developed to provide followup action to ensure that appropriate file retention practices are observed. Long-term or indefinite retention periods will not be used except in extraordinary circumstances or as required by regulations or other directives in individual cases. See paragraph 4-10 for long-term storage of magnetic tapes.

b. External visual identification of magnetic tapes and similar media (e.g., cassettes and cartridges) may include the following:

(1) Permanent labels containing the organizational address or DPI code (AR 18-3) and the assignment of a local serial number. The serial number must not be keyed to the manufacturer's serial number at DPIs where classified tapes are used, because under these cirucmstances there is a requirement to change local serial numbers to prevent reidentification of declassified or downgraded tapes (See AR 380-380).

(2) Temporary external labels should always be used to identify, the file or data-set name, volume number (e.g., reel of reels), as-of-date, creation date, purge date or retention period, and data classification or protection requirements. Temporary labels are not required when using an automated library system; however, most systems do generate labels and labeling facilities inventory and control of magnetic media.

(3) Semipermanent labels, as required by AR 380-380 will be used to identify classified media. These labels will always reflect the highest level of classification of data written to the media since last degaussing or other approved erasure, regardless of present contents. It is good practice to specify and mark separate groups of media for use at each level of classification required. See AR 380-380, for detailed guidance on the care and handling of classified magnetic media.

c. The storage of backup files in areas offsite, not subject to the same major threats as the library or computer room, is mandatory to reduce the risk to ADP record files, in conjunction with COOP.

(1) According to the needs of the DPI, this may include selection of prior versions of the same data-set versions, periodic complete dumping of disks or other media having resident files, or, normally, a combination of these techniques.

(2) Alternate files storage areas must meet the same environmental criteria as libraries unless the files have been specially wrapped to protect them adequately. If wrapped for shipment, backup tapes may be stored in an area which has an environment within the range of 40 to 90 degrees F, 20 to 80 percent relative humidity, and maximum wet-bulb temperature of 80 degrees F. These criteria are maximum acceptable limits, and may not be exceeded in any instance. Tapes stored under these criteria must be removed from any protective wrappings and conditioned in the normal computer room environment for at least 24 hours before use. Due to this requirement, backup tapes that may be needed immediately will not be stored under the above maximum criteria.

(3) It may be necessary under certain conditions (e.g., critical organizational missions that must be supported with a minimum of delay) to pre-position selected backup files at the DPI or activity identified as the COOP site. However, this is not a basic requirement for backup files management. The movement of operations to an alternate site represents an extreme condition in COOP, whereas destruction or irretrievability of data files is a relatively more common occurrence and may be remedied by positioning backup files in safe areas accessible to the ADPE operation. (See DA PAM 18-30.)

d. By use of the information on ADP media and their contents required by a above, the library will establish a media management and control system to ensure ready identification and access to every data file required for operational purposes. Procedures will be established

to prevent the erasure or disposal of data until it is no longer needed by the user, while ensuring the efficient use of media through enforcement of realistic file retention criteria and the use of automatic purge or "scratch" dates. In this connection, permanent preallocation of blocks of media or recording space to ADP applications will be periodically reviewed to ensure that the minimum amount necessary is removed from the commonly available pool of resources, to keep the total inventory at proper levels. In addition, procedures will be established to provide for the protection from unauthorized access or physical harm of all ADP records and data under library responsibility.

4–5. Guidelines for determining tape and disk requirements. There are numerous situations in which requirements for magnetic media change. Workload increase, equipment augmentation or change, addition of new application systems, and other factors may influence the number of tapes and removable disk packs needed. An in-depth study of the factors affecting media use should then be made to arrive at the total requirements. To project those requirements, it is necessary to consider the minimum requirements of ongoing applications plus any anticipated increase or decrease in requirements. These steps may be followed in arriving at a realistic estimate.

a. The programmer or analyst for each current or projected application should estimate the number of tapes required for that application. This will take into account—

(1) Number of tapes created during each type of cycle.

(2) Number of cycles of each type planned per period. Normally, six months to a year for purposes of projection will provide an adequate baseline for an estimate, but if numerous files with long retention periods are created, the baseline may need to be as long as two years.

(3) The retention period for each type of tape file created.

b. From a above, a simple chart may be constructed to show the maximum number of tape reels each application system will require at any time. The sum of these figures will be the basic number of tapes required for application systems.

c. Through coordination between each application system programer or analyst and contingency planners, the number of tapes that will be required for contingency backup purposes may be obtained. This will include tape files created as a result of disk dumps to tape, and may also be affected by the number of back up versions of each file or data set that needs to be maintained.

d. In a similar manner, the number of tapes required for executive software, utilities, application programs in source and object coding, and test data files, should be obtained, plus the number of tapes dedicated to these for backup.

e. The sum of the above requirements should be increased by a maximum of 25 percent to allow for workload expansion, work tapes, "scratch" float, and tapes in transit between activities and attrition.

f. Before completing the estimate of total tape reels required, an analysis should be made of the feasibility of "stacking" files; i.e., writing more than one file or data set on each reel. This technique is particularly suitable to the backup storage of multiple files created in a single application system cycle. The economic advantages of this technique through reduction in requirements for storage space and tape reels may be offset, however, by the need for high quality tape and a higher level of system and operator sophistication required to use the multiple file reels. In most large computer systems, the cost of dealing with a tape problem can amount to many times the replacement cost of the tape.

g. The requirement for removable disk packs may be obtained in a similar manner. Normally, disk file space is of three types: fixed or removable resident master files, sort and work file areas, and system files for executive software, application programs, and the like. The immediate access storage (IAS) single manager for the activity will calculate the number of removable disk packs (if appropriate) required by the DPI, based on an objective appraisal of IAS operations as discussed in paragraph 4-6.

4–6. Immediate access storage (IAS) management. The term immediate access storage (IAS) includes such ADPE components as fixed and removable disks, drums, mass memory and similar devices in which data files or programs are intended to be kept resident and immediatley accessible upon command of the main or control CPU, although the device may not normally be considered an integral part of the CPU. This paragraph establishes IAS management standards for operational use by the DPI.

a. IAS single manager. At each activity, the central responsibility to implement these standards and develop additional guidelines for effective and economical IAS usage will be vested in a single individual for control purposes. Man-

agers should be responsible for evaluation and approval of any proposed new or modified usage of IAS in ADS developed by the activity. Accordingly, they should be thoroughly familiar with the installed ADPE, executive and utility software, and operational ADS. This function is often a subset of the duties of a data base administrator (DBA). The DBA is often tasked with allocating IAS due to the highly technical demands of data base management systems on ADPE resources.

b. IAS management functions. IAS techniques are convenient to use in systems design, but considerations of device cost and throughput efficiency require close monitoring and control over IAS resources. The IAS single manager will establish procedures as follows:

(1) Periodically review ongoing requirements of IAS resources in operational systems to ensure their continued justification and that the storage size required and file techniques are legitimate. Particular scrutiny must be given to files and programs kept continuously on-line (resident files) in lieu of storage on removable packs that may be mounted when required, or similar techniques. It is frequently feasible to maintain IAS files on tape between processes when continuous IAS residency is not a strict requirement.

(2) Monitor the status of "checkerboarding" in IAS files and reorganize or make the files more compact as necessary. The nature of IAS file space allocation is usually such that due to file deletion and other factors unused areas develop within the nearby storage areas. Procedures should be established to schedule and perform IAS file consolidation regularly, using shift periods when CPU usage is low, which will conserve both CPU and IAS resources.

(3) Ensure the safety and continuity of IAS files by establishing routine procedures to back these files up on tape as frequently as is necessary to protect the data by providing for ready file reconstruction. For highly volatile IAS files, such as resident master files can be updated on-line, it may be necessary to execute tape backup procedures once per shift, if other file reconstruction techniques are not more feasible. IAS file backup is an integral part of the activities COOP program. Backup tapes of all key IAS files will be kept both in the alternate files storage area (offsite) and in the magnetic media library, together with the input data necessary to reconstruct these files to a level of useful accuracy.

(4) Review device management procedures in the library and computer room to ensure that procedures are being used to properly label, maintain, and store removable IAS devices and identify current IAS files by content and location.

4–7. Care and handling of magnetic disks. The following generally apply to metallic disks or disk packs except those sealed units with integral read/write heads (Winchester-type packs), and are provided as a guide for proper disk pack care.

a. Temperature control. Magnetic disks expand and contract significantly with changes in temperature. At all times, keep them in a controlled environment with a temperature range identical to that of the computer room where they will be used. If it is necessary to expose a pack to temperatures of less than 60 degrees F or more than 80 degrees F, the pack must be conditioned within the pack covers for at least 2 hours in the same environment in which it will be used before mounting it on a drive. This will prevent loss of data caused by a shift in track location resulting from temperature changes. Portable equipment such as diskettes, floppies, or minidisks may be destroyed or damaged by temperature changes if they were in a briefcase and were suddenly brought into a different indoor environment and placed in service.

b. Loading a disk pack. Carefully lower the disk pack straight down onto the drive spindle. Set the pack level on the spindle to avoid misalignment of hub and consequent pack damage. Poor handling can generate particles that can cause surface damage and "head crashes." Reassemble the top and bottom covers while the pack is in use. Take care when loading diskettes not to contaminate the recording surface, which is exposed.

c. Unloading the disk pack. Turn off the drive and make certain that the pack has come to a complete stop before opening the drive lid or drawer. Never stop the pack by hand. Replace the top pack cover and then remove the pack by lifting straight up to prevent damage to disk surfaces. Immediately replace the bottom cover. For diskettes, the media must be immediately replaced in the protective folder to prevent damage.

d. Storage. Always store the packs with both covers attached. Do not stack packs on top of each other or on edge in holders designed to store pack covers. Store packs in metal cabinets designed for this purpose. Do not store near or expose packs to high-intensity electrical fields

from motors, transformers, electrical power cable, or similar energy sources.

e. Disk pack cleaning. With proper handling, storage and environmental conditions, the magnetic surfaces of metallic disk packs rarely need cleaning. Do not ever clean manually, as the likelihood of unrecoverable damage to the pack and read/write heads is extremely high.

(1) If necessary, activities may consider using the services of a professional disk pack refurbishing organization listed on the General Services Administration (GSA) ADP schedule. Normally, these services include cleaning, replacing disks damaged by "head crashes," rebalancing, and read/write certification.

(2) The acquisition of automatic disk pack cleaning equipment may be justifiable, depending on volume and environmental conditions. These cleaners will remove most surface contamination and will not damage any stored information.

(3) Keep top and bottom plastic covers for disk packs clean to prevent dust or other contamination from reaching surfaces of the pack. Clean them with a lint-free tissue and 91 percent isopropyl alcohol. Also remove any gummy residue from label removal with alcohol.

(4) Also, clean disk pack hub and drive spindle. Check periodically and clean with alcohol and a lint-free tissue.

f. Labeling. Always label each pack and both of its covers, using sufficient information to identify the pack and its use. Each pack should also have a removable label or tag affixed to the drive for identification while the pack is mounted. Do not place a new label on top of an old label on the pack. Enter all necessary information on each label before putting it on the pack to reduce possible damage from handling pressure. Never use pencil erasers to correct or erase an old label, as the eraser particles could cause "head crashes" or other problems. To correct information, use a new label. Take care not to write on labels affixed to diskettes because the diskette will be damaged.

g. Filter replacement. All disk pack filters require eventual replacement; check them frequently. Replacement frequency depends on the amount of pack usage and environmental conditions. Filters must be designed to manufacturers' specifications or be of screen-type construction, having a maximum spacing between strands of 0.00173 inch. The material will not contain tendrils or lose particles that can separate from the filter and enter the filtered system.

4–8. Care and handling of magnetic tapes.

a. The magnetic tape read/write operation is performed within exceedingly close physical tolerances. Very small foreign particles can easily cause enough separation between the tape surface and the read/write head to cause errors. Temperature and humidity variations, in addition to causing distortion of the tape backing, can also contribute to static electricity buildup, which attracts dirt particles and can cause problems in rewinding because the tape layers will adhere to each other. Improper handling of the reels can readily cause damage to the tape edges, which may result in unrecoverable errors. Following the procedures in this paragraph will minimize unproductive reruns, downtime, and related costs caused by dirty or damaged tapes.

b. Physically handle magnetic tape reels, cartridges, and cassettes only when it is necessary to use them on ADPE or perform library maintenance operations, because handling increases the possibility of damage to the tape. While it is inevitable that tape will acquire errors with age and use, proper handling will extend use. Always protect open reels of tape with well constructed canisters or wraparound rings during handling and storage. The canisters usually supplied by the tape manufacturers protect the reels best, because the canisters provide a dust-free environment, support the reel by the hub, and provide good protection to the sides of the open reel. However, it is frequently necessary to use wraparound rings to achieve savings in storage space. While the rings do not afford the same degree of dust and physical protection, they can be effective when used properly. When using wraparound rings, the reels must be handled so as to prevent the reel flanges from being squeezed, which causes tape-edge damage. Before the rings are removed during use, dust accumulations on the exposed surfaces of reels stored in wraparound rings should be removed with a dust absorbent cloth to prevent the dust from contaminating the tape.

c. Magnetic tape, whether protected by canisters or wraparound rings, should be handled in accordance with the following basic safeguards:

(1) Condition tape for at least 24 hours before use in a temperature and humidity environment equivalent to that of the computer room where it will be used.

(2) store tape vertically and in wraparound rings or similar devices that provide equivalent protection.

(3) Do not stack tapes on top of each other,

except for short periods in connection with their use, and then only when protected by canisters or wraparound rings.

(4) Do not leave empty tape canisters because of dust or other contaminants. Hang wraparound rings in a clean area when not in use.

(5) The hub will always handle the tape reels, never the flanges. Take care to avoid striking, squeezing, or otherwise compress or damage the flanges, which is likely to cause irreversible tape-edge damage.

(6) Periodically remove takeup reels from the tape drives, and check for dirt or other contamination. Also periodically check the reels for signs of warping or other damage.

(7) Do not leave tape leaders lying on a table or floor or otherwise exposed to contaminating surfaces.

(8) Clean the complete tape path on each tape drive at least after every 8 hours of operation. Use a nontoxic and nonflammable cleaning solution designed for this purpose.

(9) Check read/write heads, capstans, and pulleys daily for surface distortions, which may damage the tape.

(10) Never touch the recording surface of a good tape between the beginning of tape (BOT) and end of tape (EOT) reflective markers.

(11) Transport of magnets or magnetic materials into computer rooms or magnetic files storage facilities is prohibited.

(12) Avoid exposing tapes or other magnetic recording media to high-intensity electrical fields, such as close proximity to those generated by electric motors, power cables, and radar signals, because recorded data may be erased.

4–9. Magnetic tape cleaning procedures.

a. Owing to the wide variety of conditions under which magnetic tape is used in the Army, no specific criteria may be given for cleaning frequency. As part of the schema of management controls, the manager will maintain and monitor statistics on tape errors for each magnetic tape used. In addition, read/write error and retry statistics will be collected for each tape drive to assist in identifying individual drives that are damaging tape or causing false indications of tape problems. A label should be affixed to each tape to be marked each time the tape is used, so that a record of tape usage may be kept. In lieu of the above procedures, automatic tape management systems, which generate the same type of information, may also be used if otherwise justifiable. Using these statistics, managers should then develop and maintain a tape rehabilitation program suitable to conditions in their activity. This program must achieve a balance between tape usage efficiency and economic factors such as cost of the program's operation and value of computer time lost through poor tape quality.

b. Tapes that contain errors can frequently be restored to usefulness by shortening. The greatest number of errors will usually occur in the first 100 feet of a reel, because this part is used most frequently. When this is the case, it is appropriate to cut off the contaminated area, relocate the photo reflective BOT marker, and continue to use the tape. Usually, the reduced length will not detract from the tape's usefulness, although it may be necessary to identify the tape as shortened if large tape files are often written.

c. When the errors continue throughout the length of the tape, it should be determined if the errors are caused by physical distortion. Physical distortion is usually the result of careless reel handling or improper rewind tension adjustment on the tape drives. Such errors can be seen as wrinkles, creases, or turned-up edges. It is seldom practical to rehabilitate a tape that has suffered physical damage of these types.

d. Although the tape inventory constitutes a significant proportion of the ADP assets, individual tapes are now comparatively inexpensive. The amount of computer time expended in attempting to use a tape with defects and the cost of tape rehabilitation equipment and labor require close management control to ensure that a tape rehabilitation equipment program remains cost-effective. It is often more economical to discard a tape on which repetitive errors are experienced after initial cleaning or shortening, than to expand additional resources beyond the replacement value of the tape. The following guidance is suggested: Tapes having 1 to 10 errors, return to service; tapes having more than 10 errors, destroy.

(1) Tape cleaning only. Tape may be cleaned by using a cleaning machine, which passes the tape over a knife edge to remove contaminants from the oxide surface. This equipment can remove approximately 90 percent of the tape errors caused by dirt or particles of oxide or backing material. Also, the tape is smoothly wound as a result of precision winding and programmed tension. Equipment of this type will only clean tapes and is capable of cleaning approximately six tapes per hour, including setup and takedown time. The tape librarian or

an operator should be capable of operating two tape cleaning machines simultaneously. The important advantage of this process is that it cleans without destroying the data recorded on the tape, making it especially valuable for recovery of information from tapes where read errors have occurred during a process.

(2) Tape cleaning and testing. Tape may be cleaned and simultaneously tested for residual errors by using a cleaner and tester machine. This equipment will in addition to cleaning the tape perform a nonstop inspection by writing and reading the tape, and will indicate the number of errors remaining after cleaning and their location. As a result of this process, the true condition of the tape is known, and a determination can be made to—return the tape to operation; shorten the tape; attempt to repair the tape; or discard the tape and replace it. Tape cleaning and testing equipment of this type is capable of processing approximately four tapes per hour. This process will destroy any data recorded on the tape. A somewhat less expensive method, which achieves the same purpose, is to use a simple tape cleaner in conjunction with a commercial proprietary software package that allows the computer to perform the testing function and display error information via printout. This process may not be suitable for use at all DPIs, however, due to its requirement for computer resources and an involved method of operation.

(3) Tape cleaning and certification. Tape should be cleaned and certified to a level of quality near that when new by use of tape certification equipment if the DPI has the necessary equipment. The cost of acquiring new tapes versus the cost of tape cleaning and certification should be considered before the DPI undertakes this procedure.

f. The equipment discussed above is classified as ADPE. It may be procured in accordance with procedures in AR 18-1. Full justification as to the type of equipment needed is required in all cases.

4–10. Long-term storage of ADP records. There is an increasing requirement to store ADP records over long periods (in excess of 1 year). Information of archival value and data pertaining to financial and logistical management subject to audit are two examples of this. The media normally used for long-term storage are microfilm and microfiche for printed ADP material and magnetic tape for all other ADP records. This paragraph will only discuss procedures for long-term retention of magnetic tapes.

a. Selection of records. Due to the cost of magnetic storage media and the controlled storage environment, carefully select files as candidates for long-term retention. Normally, retain in magnetic tape from only those files identified as having true archival value or as required by law or regulation. Selected files resident on disk or other IAS will be reformatted into tape records that may be read on a variety of tape drives. To reduce storage space required for tape files, the feasibility of "stacking" techniques should be explored. Tape files seldom use more than a few hundred feet of a 2400-foot standard reel, which permits more than one file to be stored on a single reel. This technique is particularly suitable for the storage of related files. The storage efficiency is offset by the greater potential risk of unrecoverable data if the reel is damaged and by the greater sophistication of the control system needed to handle multiple-file reels. Storage of classified data by this method should comply with AR 380-380.

b. Documentation. Develop documentation to accompany each type of tape file. (See para 4-2c.) This documentation will include physical file and recording mode information to describe the characteristics of the tape drive necessary to read the tape (e.g., density, tracks, parity, recording mode). The documentation will also contain full data specifications to develop a program to extract and manipulate the content of the files (e.g., record length, blocking factor, label record layout, description of data elements).

c. Tape quality. For this type of storage, tapes should be of the highest quality and as error-free as possible. Preferably, new tapes should be used, which have been certified by the DPI, immediately before recording of long-term retention date. As a minimum, tapes will be tested and certified within 6 months before they are used to record information for long-term retention. After recording, all tapes will be reread by the computer and verified as error free. They should be rewound under programmed tension of 6 to 8 ounces (for ½-inch tape).

d. Storage facility. Long-term storage of tapes will be done in an environment that is as stable and contaminant-free as possible. As a minimum the environmental criteria specified in paragraph 4-7 will be followed. The following set of more restrictive criteria for long-term tape storage is recommended by the National Archives and Records Service:

(1) Tape storage vaults will be temperature and humidity controlled. A positive inter-

nal air pressure is desirable to prevent any dust intrusion.

(2) Temperature range should be 70 degrees F ± .5 degrees. Wet bulb temperature must not exceed 80 degrees F to avoid damage from adhesion of adjacent tape layers.

(3) Humidity range should be 50 percent ±5 percent.

(4) Dust and dirt controls must keep dust particles below 50 microns in size. The air-conditioning system should preferably have an electrostatic precipitator for this purpose.

(5) Continuous temperature and humidity recording equipment should be in use to monitor environmental conditions.

(6) Metal storage racks should be electrically grounded, and at least a 2-foot separation should be maintained between the storage racks and all electrical fixtures and power lines.

(7) Tapes must be stored upright.

(8) Plastic canisters should always be used in lieu of wraparound rings for long term storage. These provide numerous advantages, including support of the reel at the hub, better protection from contaminants, and protection from damage due to handling, water, smoke, and rapid environmental changes.

e. Verification for readability. Annually, a 3-7 percent statistical sample of all reels on long-term retention should be read to identify any loss of data and to discover its causes. When appropriate, files will be rewritten onto good tapes to prevent loss of information. It may also be necessary to rewrite the tapes due to changing technology or aging of the tapes.

4–11. Shipment of magnetic tapes and disk packs. Take precautions of magnetic storage media to protect it from physical or electronic damage during shipment and to provide adequate accompanying information to permit the recipient to read the data stored.

a. Standard Form (SF) 277 (Transmittal Form for Describing Computer Magnetic Tape File properties) will be used for shipping magnetic tapes. DA Form 200 (title) will be used for shipping all other ADP media.

b. Shipment of ADP data should be sequentially numbered for control purposes, and the shipment number should be entered in the appropriate block on DA Form 200 and SF 277. These forms should be prepared in at least three copies. One copy should be retained by the sender for file and return suspense purposes, one should be signed by the recipient and returned to the sender to acknowledge receipt; and one copy should be retained by the recipient for file. Suspense files will be maintained by shipment number to ensure that receipt is acknowledged and that the media (tape and disk) have been returned. ADP managers may, when economically justified, devise procedures whereby recipients retain ownership of the media to save the attendant costs of inventory control, packing, handling, shipping, and receiving. At times, such costs may be more than the cost of the media. Any necessary information that cannot be contained in the blocks of the forms may be entered on sheets of plain paper attached to each copy of the form.

c. Magnetic media will be packed securely and shipped in protective dust proof containers. Tape reels should be enclosed in canisters in preference to wraparound rings to provide better physical protection. Rigid disks should be packed in their normal protective covers. Floppy disks should be packed with rigid protective packaging material to prevent damage to recording surface.

4–12. Areas which information should be included in a Magnetic Media. Library standing operating procedure are as follows:

a. Responsibilities of:
   (1) Chief, Magnetic Media Library
   (2) Magnetic Media Librarian

b. Security
   (1) Physical Security of Magnetic Media Library
   (2) Information Security
   (3) ADP Security

c. Safety
   (1) Personnel safety
   (2) Fire safety

d. Procedures for:
   (1) Cleanliness of magnetic media library
   (2) Tapes and disks identification
   (3) Tapes and disks accountability
   (4) Tapes and disks handling
   (5) Tapes and disks cleaning
   (6) Tapes and disks storage
   (7) Tapes and disks inventories
   (8) Disposition of damaged magnetic media
   (9) Receipt, Control and Disposition of classified media
   (10) Mailing of magnetic tapes to other organizations
   (11) Receipt of magnetic tapes from other organizations (Foreign tapes)
   (12) Initialization of magnetic tapes

CHAPTER 5
RESOURCES AND FACILITY MANAGEMENT

5–1. General. Managers will ensure protection of the Government's investment in ADPE and other ADP supplies and resources (ADPR), as well as the availability of these resources to the organizations dependent on them for successful mission accomplishment by adequately planning and managing the facilities housing ADPR. This chapter provides general criteria to be used by activities for development and maintenance of a proper environment for ADPR. Such criteria are considered essential to the efficient execution of the ADP function, and must be followed as closely as possible.

a. The criteria in this chapter generally are apply to computer systems and peripheral devices located in DPIs. When vendor environmental specifications are more stringent than these guidelines, the vendor's specifications take precedence.

b. In the case of remote terminals, minicomputers, microcomputers, data entry equipment, and similar ADPE, other factors must be considered. Normally, these types of ADPE are less costly and less demanding in environmental requirements, which may be reflected in less stringent facility design and maintenance criteria.

c. Of these factors, the most basic consideration in management and protection of ADP resources is the degree of dependency placed by the supported organizations and functional activities on these resources. Under these conditions it may be necessary to provide a very sophisticated level of protection to all types of ADPE and associated data files.

d. Where major deficiencies in site quality and fire protection are apparent, the servicing facilities engineer must be contacted for assistance.

5–2. Computer room inspections. The environment and operating practices in the computer room and associated areas, which are essential to the efficient execution of ADP functions, must be supported by an inspection program. A schedule of inspections will be developed and should be accomplished by other than computer room personnel to ensure compliance and an objective appraisal. Inspections should be conducted at least once each week, or more frequently if conditions dictate.

Computer room personnel should be made aware of the reasons for these inspections and for the special requirements governing the maintenance of the controlled computer room environment. The DPI manager will keep a record of the results of these inspections to discern trends and ensure that corrective action has been taken. These inspection records are an integral element of the manager's schema of management controls.

5–3. Cleanliness of computer rooms and associated areas. Magnetic file storage media, e.g., tapes and disks, are vulnerable to damage from fumes and small particles of dust. A high standard of cleanliness is necessary in computer rooms and other areas where magnetic files are stored or handled. A routine cleaning schedule for these areas must be established and adhered to. Personnel assigned to clean these areas should be permitted to do so only after receiving adequate instructions in proper cleaning techniques. An authorized representative of the activity should be present during janitorial cleaning operations.

a. Air-conditioning. Air-conditioner filters should be of a type approved for computer room use by competent authority (e.g., Underwriters Laboratories) and checked frequently, particularly if an excessive buildup of dust appears on equipment or is otherwise evident. The air conditioning system should be used to maintain a positive pressure of 0.05 inches water static pressure within the computer room and magnetic media storage areas to reduce dust infiltration from outside sources.

b. Machine operations. Equipment should be operated to minimize the effect of dust (e.g, tape and disk drives operated with doors closed). Dust accumulating devices such as card pockets and interiors of printers should be frequently cleaned to prevent deposits of dust and lint. Special attention must be given to tape drive read/write heads, glass doors and vacuum columns; all of which should normally be cleaned at least once per shift of operation. Only cleaning materials (nonflammable and nontoxic) and lint-free or treated cloths recommended for cleaning of ADPE will be used for this equipment. Dust filters for magnetic disk and drum devices should be frequently changed following the manufacturer's specifications according to the amount of device usage.

c. Dust control. Dust mops not specifically treated for dust and lint control, as well as brooms, blackboards, feather dusters, brushes,

and aerosols, will not be used in computer rooms and associated areas. Venetian blinds, overhead pipes, and lighting fixtures hung from the ceiling tend to accumulate considerable amounts of dust and should not be used in these areas. Where currently installed, they should be kept as free of dust as possible.

d. Floors. Tile covered floors should be kept polished and, if necessary, buffed to a hard finish. Waxes which powder or flake and steel wool buffing pads should not be used. Raised computer room floors should not be wet-mopped to avoid seepage through the joints to cables underneath. Care should also be exercised when damp-mopping or waxing this type of floor. The space under raised floors must be kept clean, since accumulation of debris here is a fire hazard and also can act as a dust reservoir for the air-conditioning system. Cleanliness will be facilitated if the concrete subfloor and perimeter masonry walls beneath the surface of the raised floor have been sealed with two costs of epoxy paint, or the equivalent.

e. Rugs and carpets. Throw rugs and fiber mats should not be used in computer rooms. Carpets in machine rooms are likewise not recommended because of the static electricity that may be generated. Where determinations have been made locally that carpeting must be used in these locations, it must be of a spark-resistant and fire-retardant construction and be approved by the ADPE manufacturer involved. Special care must be given to installed carpeting to eliminate lint and dust buildup.

f. Clutter. Floors will be kept free of all trash and debris. Materials not essential to the routine operation should not be kept in the computer room. This includes such items as large quantities of paper and tapes beyond that necessary for a single day of operation. Special attention must be given to out-of-the-way areas, including the space behind the equipment, where accumulation of extraneous materials tends to occur.

5–4. Personnel traffic. To maintain security and environmental control, only personnel authorized by reason of their employment therein will be permitted access to the computer room and magnetic files storage area, unless clearance has been granted by proper authority. Notice of this restriction will be posted at each entrance. Traffic into and through these areas should be kept to a minimum. Computer operations personnel must be aware of their obligation to comply with and enforce security directives, including protection of classified and unclassified information and ADPE. Authorized visitors to the computer room should be accommodated by providing a reception area located to avoid interference with operations (See AR 380-380.)

a. Managers must be alert for possible sabotage or inadvertent disruptions to computer operations. Personnel departing the facility must be carefully screened to ensure that they are not carrying out any items without proper authority (e.g., tapes, diskettes, or listings).

b. Smoking, eating, or drinking will not be permitted in the computer room or areas where magnetic files are stored or handled. Signs stating such restrictions will be posted at each entrance. Ash receptacles should be placed outside and away from entrances. Whenever possible, a break area will be provided outside of these clean areas for the convenience of operators.

c. To reduce traffic, adequate telephone service will be provided within the computer room and magnetic file storage area. However, installation of any type of communication devices in these areas must comply with security directives.

d. Coat racks are not permitted in the computer room and magnetic file storage areas, since they contribute to undesirable traffic and dust or lint conditions.

e. Facilities should be laid out to allow ease of movement about the computer room and reduce traffic. Ready access to normal and emergency exits must be provided for safety reasons.

5–5. Storage of materials in the computer room. Adequate storage space will be conveniently provided near the computer room for ADP supplies and input and output materials, since such space is essential to good housekeeping and operating conditions. However, the computer room will not be used as a bulk storage area. Minimum stock requirements for each computer room and the replenishment schedule necessary for continuous operation should be determined, and only these quantities permitted in the computer room. Therefore, the following items should be provided in the computer room:

a. Tape racks for temporary storage of only those tapes required for a given shift. The computer room will not be used as a tape library or general tape storage facility. See chapter 4 of this pamphlet for guidance on tape storage criteria. Similar provisions apply to installations using disk packs. Small numbers of frequently used disk packs may be stored in metal-enclosed cabinets in the computer room.

b. A cart for transporting tapes and disk packs to and from the tape library, and a smaller

cart containing input and output material for the runs in progress. Extra carts should not be left in the computer room.

c. Metal or other fire-resistant containers for the storage of program card decks, operating manuals, frequently used forms, paper and other supplies. The amount of blank tabulating cards and paper stock stored in the computer room should not exceed that required for 1 day of operation. Other flammable materials will not be stored in the computer room.

d. Temporary storage cabinets or tables for input and output materials, remote from the console and peripheral equipment. Output from production runs should be removed from the computer room without delay, unless preliminary checking is required prior to run completion. If necessary, adequate work space should be provided in a remote area of the computer room or adjacent to it.

e. An adequate number of noncombustible wastebaskets, with self-closing or tight fitting covers, must be strategically located in the computer room to reduce traffic and prevent undesirable accumulation of combustibles. When security requires the use of burn bags, they should be enclosed, if practical, in metal containers with self-closing tops, and carefully monitored to comply with security directives.

5–6. Noise level. The noise level in the computer room will not exceed 85 decibels on the A scale (DB (A)) for steady noise and 140 decibels (DB) for impulsive noise at any individual's ear without provisions for adequate personnel hearing protection, as established in AR 40-5. The manager will request the servicing medical authority, as defined in AR 40-5, paragraph 1-3a, to perform surveys with a decibel meter to determine the actual noise level in the computer room and other noisy areas. Noise control is a major consideration when developing specifications for new ADPE, installing new equipment or altering the computer facility. When a noise problem has been identified, the manager will contact the facilities engineer, GSA building manager, or other official controlling the building, for remedial action. Special precautions, based on competent professional advice, should be required for employees with a hearing impairment. Acoustical treatment or other noise control measures should routinely be provided for the computer room ceiling and walls from the ceiling down to wainscot height. Areas with noise levels exceeding the maximum criteria stated above will be properly marked in accordance with AR 385-30.

5–7. Temperature and humidity control.

a. Manufacturers' recommendations for specific equipment will be used to determine the optimum temperature and humidity ranges for the computer room in which such equipment will be operated. When the proper limits of temperature and humidity are approached, extreme care must be exercised to ensure continued operation without damage to ADPE or error conditions. To prevent excessive temperature and humidity fluctuations, all doors to the computer room will be kept closed when not in use. Signs stating such restriction should be posted on all doors leading to the computer room. Equipment should never be left unattended while operating.

b. Temperature and humidity controls will likewise be established over magnetic media files storage and handling areas, input/output production control, field engineer rooms, and rooms where tabulating cards and paper stock are being conditioned for use.

c. In the absence of more restrictive manufacturer's recommendations for ADPE and supplies, the following criteria will apply for the areas specified above: A year-round temperature of 73 degrees F (dry bulb) and 50 percent relative humidity will be maintained with a tolerance of +5 degrees F and +10 percent relative humidity.

d. An adequate warning system should be installed and maintained to warn of near-limit temperature and humidity conditions so that prompt action can be taken to prevent equipment or file damage and reduce rerun time or downtime, especially in the larger computer complexes. A recording instrument (24 hours or 7 days) will also be used to provide a record of temperature and humidity fluctuations. The recorder when used in the computer room must be located to reflect the actual room conditions. When used elsewhere, the recorder should be placed next to the tape files or supplies being conditioned. The recorder should be calibrated frequently to ensure accuracy.

e. Only those personnel authorized by the activity manager should be permitted to regulate thermostats controlling the computer room atmosphere.

f. Air-conditioning design criteria should include an expansion factor of 25 percent to provide for future installation of new equipment. Depending on the criticality of the ADPE to the organizational mission, it may be necessary to provide separate air-conditioning units to ensure continued operation in the event of mechanical failure.

g. Master control switches for complete shutdown of the air-conditioning units (or local air handler, in the case of a centralized air-conditioning system) that service the computer room and magnetic media storage areas will be located next to the principal and emergency exits.

5–8. Lighting and electrical service.

a. Normal illumination. Adequate lighting will be maintained in the computer room and related area. There must be a minimum intensity of 75-100 footcandles (FC) at all computer room work surfaces or points on the ADPE that must be kept under observation (this includes panels on ADPE that must be opened for maintenance access), with an absolute minimum acceptable level of 40 FC as measured 40 inches above the floor at any point in the room. The lighting fixtures in the computer room, magnetic files storage and handling areas, and other locations where cleanliness is essential, will be of the recessed type in order to reduce the amount of dust accumulating on surfaces. Other areas of the DPI will conform to illumunation criteria in AR 420-43, paragraph 11a.

b. Emergency illumination. Battery operated lighting units will be provided for safety and protection of personnel and to assist personnel shutting down ADPE. These units will be installed as a part of the building's fixed wiring system, to operate automatically whenever the main illumination power supply becomes inactivated. They will be placed at critical locations throughout the facility to allow personnel to complete necessary tasks and safely exit the facility in the event of a power failure.

c. Electrical cables. To avoid trip and shock hazard, all power and signal cables for ADPE and associated equipment will be run in a safe manner. When cables cannot be run underneath a raised floor, they must be enclosed in channels or ducts with sloping sides or otherwise protected. Cables should be neatly bundled and clearly marked.

d. Nonessential electrical equipment. Electrical appliances and equipment not essential to the functioning of the ADPE will not be permitted in the computer room, magnetic file storage and handling areas, and areas of similar activity. This includes, but is not limited to, coffee pots, hotplates, electric razors, and the like. The use of adding machines and extra lamps should be restricted to only the most essential.

e. Main power service. In most instances, a single prime source of electrical power will be sufficient to assure satisfactory performance of computers and similar ADPE. This power source should have the characteristics, reliability, and quality necessary to support the accomplishment of the assigned DPI mission. If the ADPE operation is considered critical to an important military role of the organization supported, and DPI power problems may be expected to affect the performance of this role adversely, then obtaining a backup power source or other means to ensure adequate power should be considered. In view of the expense associated with each of these alternative solutions (both initial costs and continuing maintenance costs), their use must be fully justified in terms of mission essentiality and will require ARSTAF or MACOM AMO approval prior to installation. Backup power sources include 1) motor-generated equipment to reduce transient variations in voltage or frequency, 2) uninterruptible power supply to safeguard against short outages and 3) standby generators for more prolonged outages.

f. Power frequency converters. ADPE designed for use in CONUS normally requires power of 60 hertz (Hz) frequency. In many fixed sites overseas, commercial power is available only at 50 Hz frequency. The successful operation of ADPE under these circumstances requires that either the ADPE be rewired to accept 50 Hz power or a power frequency converter unit be used continuously. Rewiring of Government-owned ADPE for 50 Hz use is costly and restricts its usefulness in terms of power consumption for long-term continued use. Department of the Army policy is as follows:

(1) ADPE leased for sites with 50 Hz power will be rewired prior to Army acceptance for use without a power frequency converter.

(2) A cost-benefit analysis will be made prior to Government purchase of ADPE to determine whether it should be procured under 50 Hz specifications or whether continued use of a power frequency converter will be economically justifiable.

(3) It will be necessary to base the cost-benefit analysis on actual figures as much as possible. The efficiency of the frequency converter unit in use must be obtained from manufacturer specifications or derived by facilities engineer comparative input/output power consumption tests. Average power consumption by the ADPE must be obtained either through actual measurement or by estimation from manufacturer specifications. Electricity cost per kilowat hour for the type of service provided must be obtained from the local facilities engineer.

g. Electrical service to computer room. A separate power feeder from the building entrance power panel or transformer should be provided to supply only the ADPE. The power panel should be located in the computer room and no other power loads (e.g., lighting, air-conditioning equipment, convenience outlets) should be served from this panel. Master control switches for complete shutdown of the main ADPE power feeder will be located next to principal emergency exits. Branch circuits to the ADPE should be installed under the raised floor using national electrical code (NEC) approved flexible cable in lieu of conduit to provide flexibility for future changes or relocation of computer equipment. In accordance with AR 530-4 and TB 530-1, junction boxes and receptacle outlets will be raised at least six inches above the floor slab to avoid water exposure.

h. Electrical ground for ADPE. The ground wire from all units in the computer room must be tied into one common insulated ground bar in the computer circuit panel. This common ground bar must be connected to a common earth ground electrode, and will not be interconnected to the ground neutral conductor. This eliminates the possibility of current being circulated through the computer equipment grounding system from other grounded conductors. Water pipe grounding is not acceptable. Raised flooring will be grounded to reduce static electricity accumulations.

5–9. Preventing water and flood damage. Aside from fire, flooding is the most likely cause of severe damage. This may occur from natural disaster, building imperfections, improper location of the ADPE in the building, and other factors. Flooding bears with it the threat not only of water damage to vulnerable materials such as paper-based records and files, but also of serious contamination or destruction of equipment and magnetic-based records through waterborne dirt, oil, and chemicals. Planners must take these threats into account when making initial selection of the location and building to house the facility when determining the physical site within the building for installation of the ADPE and files storage areas, and when developing routine procedures for backup of essential files, documents and supplies. The provisions of FIPS PUB 31 will be used as a guide under these circumstances. The DPI managers must assess and take precautions against the threat of flood damage to this facility in the following situations:

a. Natural disaster. If the ADPE must be operated in a locality where flooding is likely to occur, such as on a river in a flood plain, it should be located to minimize the threat, such as on high ground or on an upper level of a sturdily constructed building. Under no circumstances should the ADPE be installed below ground level when river overflow, drainage runoff, or high waves pose a threat.

b. Building imperfections. The ceiling slab over the computer rooms and files storage areas should have no holes where water may leak through. Overhead steam and water pipes and so-called "wet columns" which contain plumbing lines should not be located in these areas; if they cannot be rerouted, then all pipes should be inspected frequently for leaks.

c. Drainage. No computer room, ADPE, or files storage area (above or below ground) should be without special precautions to ensure positive drainage. This includes the requirement for drains to be equipped with backwater check valves and the installation of automatic sump pumps or sump alarm systems to warn of the presence of abnormal water levels. Drainage should also be provided on areas equipped with water sprinkler systems.

d. Water from air-conditioners. Adequate plumbing must be provided for condensate drainage from air-conditioning units. Where chilled water pipes are run underneath the raised flooring, above a false ceiling, or in other hidden areas, drip alarms should be considered for all points where condensation could occur, such as valves and exposed portions of pipe.

5–10. Employee briefings.

a. Environmental controls. ADP operations personnel must be thoroughly briefed on techniques to be followed in the maintenance of a proper environment in the computer room and associated areas. A copy of the procedures should be given to all operations personnel.

b. Emergency actions. Operations personnel will also receive periodic briefings about actions required in an emergency. The briefings will include, turning off electrical power for the ADPE and the air-conditioning system, evacuating data files, using emergency power (if available), and actions required in fire emergencies. Responses to emergency conditions will be fully documented in the facilities COOP.

5–11. Fire and safety practices in the computer room and associated areas. Good housekeeping and operating practices are essential to an effective fire prevention program. Personnel safety and ADPR protection are paramount ob-

jectives; therefore, clear access must be maintained at all times to exits, alarm boxes, emergency control switches, and firefighting equipment. The servicing fire department or installation fire marshal will be informed of the location of all tape libraries and tape storage areas, so that firefighting personnel can be aware of the special precautions required for protection of these media and of the possibility of toxic fumes from the burning plastic. In addition, the manager must maintain close liaison with the fire marshal to obtain guidance and courtesy inspections to improve fire safety practices. Additional guidance on fire safety may be found in AR 420-90. All request for waivers from this pamphlet concerning fire safety must include information outlined in appendix B.

5–12. Computer room construction and furnishings. Detailed guidance on site selection and preparation for new facilities can be found in TB 18-13. The computer room and associated areas, including ADPE maintenance area, magnetic files storage and handling area, I/O control, and supply rooms, will be constructed and furnished to ensure maximum prevention of fires, personnel safety, and protection from fire, water, and smoke damage in the event fires do occur. The following criteria for these rooms will be followed, in conjunction with guidance from the installation fire marshal or comparable authority:

a. ADP resource will be located in noncombustible buildings. If it is necessary to place ADPR temporarily in buildings of combustible construction, stringent fire prevention measures will be enforced at all times. Nontemporary housing of ADPR in combustible structures must be fully justified and will require the approval of Commander, USAISSSC (ASB-TEE-MR), Fort Belvoir, Virginia 22060-5456.

b. Computer rooms, ADPE maintenance areas, magnetic media files storage areas, and supply rooms will be separated from other portions of the building by fire walls or fire partitions. Openings in these walls will be equipped with fire doors having, as a minimum, the same fire rating as the walls. When fire exposure exists from materials or buildings outside the building, protection must be provided as described in NFPA Standard No. 80A, Protection Against Exposure Fires. See appendix C.

c. At least two readily accessible and properly marked emergency exits from the computer room will be provided. Doors to the computer room and associated areas will open outward to prevent personnel from being trapped in case of fire. Doors should be equipped with "panic bar" release mechanisms.

d. Fire alarm pull boxes will be installed and marked to be readily available to all personnel in an emergency. If possible, the alarm should sound within the immediate area of the building and transmit a signal to the servicing fire station or a central alarm location.

e. Ionization type smoke detection devices will be installed at strategic locations in the computer room, under floor spaces, supply room, magnetic media files storage room, I/O control room, ADPE maintenance area, and in the air handling system for these areas. These detection devices should be connected to an alarm system that must sound within the immediate area of the building and transmit a signal to the servicing fire station or a central alarm location.

f. Master control switches that shut off all power to the computers and peripheral equipment will be installed to override all other electrical controls used during normal computer operations. Master control switches that shut down the air-conditioning units or air handlers (unless these units were designed for smoke removal) will likewise be installed. These master control switches will be located in a readily accessible manner near each principal and emergency exit to the computer room and must be conspicuously labeled. Each switch will be protected to prevent accidental shutoff. Smoke removal blower controls, if available, will be conspicuously located adjacent to the master control switches.

g. Computer rooms, magnetic media files storage areas, and supply rooms should be equipped with automatic sprinkler systems, preferably of the "dry-line" type of Halon unless a waiver has been obtained from the Chief of Engineers. (See para 5-11.) These systems should be installed so that on activation they will sound a local alarm, transmit a signal to a central alarm location, and must also deenergize the main electrical power supply to the electronic equipment located in the affected room.

h. Special fire suppression systems, like the Halon 1301 (bromotrifluoromethane) automatic distribution systems, may be installed where warranted by degree of fire threat and criticality of ADPE to mission performance. It is preferable to use these special and expensive systems at points that cannot be covered effectively by a sprinkler system, e.g., under raised flooring or in cable tunnels, rather than in the

computer room under raised flooring or in cable tunnels, rather than in the computer room at large.

i. Interior construction and furishing of computer rooms and associated areas will be of noncombustible or fire-resistant materials.

j. Electrical equipment must have been approved for installation in the computer room, and will be installed under the direction of the servicing facilities engineer or maintenance personnel.

5–13. Firefighting equipment. A sufficient number of portable fire extinguishers (number and size to be determined by the installation fire marshall) will be kept available in the computer room and magnetic files storage areas. Each fire extinguisher must be prominently displayed in an unblocked, easily accessible location, and so located that each person will be within 50 feet of a fire extinguisher. These locations should be marked with prominent signs on the wall above eye level, so that they are immediately noticeable in an emergency. Only carbon dioxide (CO_2) or Halon 1301 fire extinguishes may be used on electrical fires; no other Class C (electrical nonconducting) extinguisher agents should be used. Fire extinguishers containing water should be available for use only on fires involving ordinary combustible materials, such as wood, paper, cloth, and plastics. Extinguishers containing water must not be used on fires involving electrical equipment. All fire extinguishers will be regularly inspected and properly maintained by following a schedule developed by the installation fire marshal to ensure that they are charged and in good working order.

5–14. Fire drills and other related training. Managers must ensure that fire drills are frequently held so that personnel may become familiar with fire evacuation routes and procedures as documented in the COOP. Training must also be regularly scheduled for the COOP staff, so they may become familiar with the DPI'S fire emergency procedures. Fire fighting team s must be schooled in the proper use of available extinguishing techniques. All personnel associated with the computer room and its related support areas will be briefed at least semiannually on the implementation emergency procedures found in the activity's COOP. Safety of personnel must be the overriding concern when developing any emergency procedure.

5–15. ADP supplies. Managers should determine or establish channels for acquisition of all ADP supplies. An important function of the operating staff is the maintenance of the physical inventory. Supply administration tasks range from storage and requisition to accounting, forecasting, budgeting, and funding.

a. Responsibility. Management has overall responsibility for all supply functions. The exercise of day-to-day supply administrative tasks will vary with the complexity and organizational structure.

b. Objectives. The objectives of these procedures are to—

(1) Ensure an effective performance of the ADPE.

(2) Avoid out of stock items and resultant expensive rush ordering.

(3) Eliminate pilferage.

(4) Provide forecasting of supply usage.

(5) Prevent spoilage due to improper handling and storage.

c. Utilization, forecasting and requisitioning. Many methods exist for maintaining and adequate supply inventory. The method to be used will depend on the size of the inventory and the rate of activity. As minimum requirements, the method selected should—

(1) Maintain a manual or automated inventory of needed supplies and ensure that the inventory has appropriate external labels.

(2) Store supplies for ready access by authorized personnel.

(3) Record utilization of each type of supply item.

(4) Ensure prompt return of unused supplies.

(5) Identify those supplies that have recurring stock outages or excess inventory.

d. Administration and accounting. Proper supply maintenance and inventory control requires that management initiate and enforce standard procedures for the operating activities under its control. These procedures should include—

(1) The accounting of supply and usage to satisfy the requirements of expenditures reporting.

(2) Establishing of a basis for budgetary planning.

(3) Establishing requirement levels for a period of not less than 90 days and provide a procedure to determine reorder points.

(4) Performing a periodic review of usage to determine if supplies on hand are sufficient or if reorder points should be changed.

(5) Establishing effective storage procedures that minimize damage during storage and handling. Paper stock should be stored on pallets or shelves to control dampness. Storage fa-

cility should be neatly arranged and provide ready access. High standards of cleanliness will apply to avoid secondary contamination of the operations environment. Physical security should be commensurate with the value of the supplies in storage.

e. Reporting responsibility. All personnel charged with supply recordkeeping must record all supply usage on an individual withdrawal slip or on a daily log. This task should not be duplicated if it is being performed elsewhere in the organization. These forms should be designed by the activity using the ADPE.

CHAPTER 6
REUSE OF EXCESS ADPE

6-1. General. This chapter implements DOD Manual 4160.19-M and establishes supplementary procedures to be used for determining the availability, screening, acquisition, reporting, and disposal of excess ADPE through the Army and DOD ADPE reutilization programs. The DOD manual contains detailed instructions for the management of excess leased and Government-owned ADPE. Army and Army contractor-operated DPI will comply with the procedures in the DOD manual, as supplemented by the guidance in this chapter. A copy of DOD Manual 4160.19-M, will be on file at all DPIs.

6-2. Reuse policy.

a. The principal purpose of the Army ADPE Reutilization Program is to provide ADPE to DPIs, where needed, at the lowest cost to the Army.

b. A primary source of supply for meeting approved ADPE requirements is excess Government-owned and leased ADPE. DOD publishes an ADPE reutilization bulletin listing all equipment available for reutilization. To receive this bulletin, submit a request to Defense Logistics Agency, ATTN: DLA-DARO, Alexandra, VA 22314. ADPE will not be acquired from commercial sources until it has been determined that the requirement cannot be met through the Army Reutilization Program. This determination will be reached by requesting screening, as follows, to determine that a requirement cannot be met prior to initiating a procurement solicitation:

(1) Submit DD Form 1851 (ADPE Requirement) to Commander, US Army Information Systems Software Support Command, ATTN: ASB-TEA-P, Fort Belvoir, VA 22060-5456. Instructions for completion of DD Form 1851, are in DOD Manual 7950 1M.

(2) Screening will be accomplished through the use of the ADPE Resource Management System Data Base (ARMSDB).

(3) Initial screening will be done at USAISSSC. The requesting activity will be notified by USAISSSC if excess equipment potentially meeting its needs is identified. Information on procedures necessary to acquire the equipment will also be provided.

(4) USAISSSC will also forward the DD Form 1851 to DLA-DARO for inclusion in the ARMSDB as Requirements Records.

(5) DLA-DARO will provide continuous, daily screening until the installation date indicated on the DD Form 1851 is reached. During the screening cycle, all equipment identified as potentially meeting the requestor's requirements will be offered to the requesting activity for their evaluation of all pertinent factors concerning equipment capability.

c. Reutilization of Government-owned equipment (GOE) is not a procurement action; therefore, it is not subject to the laws and regulations governing new procurements. Reutilization of GOE for purposes of initial installation or augmentation of existing ADPE is subject to the provisions of AR 18-1, regarding selection and acquisition of ADPE for approved data automation requirements.

d. Reutilization of leased ADPE is a sole-source procurement action and must comply with selection and acquisition procedures governing new procurements as stated in AR 18-1. Because leased ADPE often accrues a substantial amount of purchase option credits, it is important that excess leased ADPE be considered as a replacement for installed leased ADPE that has accrued fewer credits to the Government.

e. Excess GOE will be reutilized as far as possible to replace like-type, installed, leased ADPE.

f. Reutilization and disposition of all major items of excess ADPE (see para 6-4c), must be approved by USAISSSC (ASB-TEA-P) prior to relocation, regardless of purchase or annual lease cost. ARSTAF or MACOMs may recommend reutilization within their commands in accordance with AR 18-1.

g. ADPE will not be relocated between DPIs without prior USAISSSC approval, except in those instances where data processing functions supported by such hardware are transferred as a result of mission changes, command realignments, and reorganizations, or as prescribed in DA Pam 18-130, paragraph 2-8. All relocations from, to, or between DPI reporting elements must be reported as stated in AR 18-3, RCS 1108-GSA-AR (ADP MIS), for Army RCS ADPE inventory purposes.

6-3. Areas of implementation.

a. Heads of Army staff agencies and MACOM commanders are responsible for—

(1) Accomplishing, reporting and screen-

ing requirements for major items of ADPE, as prescribed in DoD Manual 4160.19-M and this chapter, and preparing excess ADPE reports for contractors for whom they exercise contract cognizance.

(2) Supplementing, as necessary, the procedures set forth in this chapter and for establishing any management controls over minor items of ADPE, to the extent that is necessary to meet agency/command requirements.

(3) Coordinating the reutilization of all excess major items of ADPE under their control with USAISSSC.

b. The Commanding General, US Army Information Systems Software Support Command, is responsible for administering the DA portion of the DOD ADPE Reutilization Program for all major items of ADPE, including monitorship of movement of selected ADPE in transit and retention of disposition records for all major items of ADPE.

c. DPA managers are responsible for acquisition and reporting of excess ADPE through channels in accordance with DOD Manual 4160.19-M and this chapter.

d. Project Managers (see AR 310-25) are responsible for reporting excess ADPE integral to weapons systems.

6–4. Reporting of excess ADPE.

a. DPAs, MACOMs, ARSTAF, and other agencies engaged in ADPE use or planning will maintain continuous surveillance over existing and proposed equipment requirements in conjunction with presently assigned ADPE resources. Special emphasis will be given to identifying ADPE systems or components before they become excess to requirements, so that timely decisions can be made on reutilization of these assets within the command, the Army, or other Federal Government agencies.

b. The using activity will comply with the following procedures after identifying major items of ADPE to be replaced or to become excess to their requirements:

(1) Complete an SF 120 (Report of Excess Personal Property) in and forward, no later than 8 months prior to the discontinuance date. If this condition cannot be met, the reason for the delay must be entered as a special footnote in block 18 of the SF 120. The 8-month reporting requirement applies to leased as well as GOE.

(a) DPA. DPAs will report through appropriate ARSTAF or MACOMs to Commander, US Army Information Systems Software Support Command, ATTN: ASB-TEA-P, Fort Belvoir, VA 22060-5456.

(b) Defense contractors. Defense contractors will report directly to DLA-DARO, Alexandria, VA 22314, in accordance with Defense Acquisition Regulation (DAR) 24-205.8, with information copies furnished to ARSTAF or MACOMs and to USAISSSC (ASB-TEA-P).

(c) Project managers for weapons systems. Report excess ADPE integral to weapons systems through command channels to Commander, USAISSSC, ATTN: ASB-TEA-P, Fort Belvoir, VA 22060-5456. If the project does not manage the system, the using agency will report the excess in the same manner as in (a) above.

(2) Prepare a separate attachment to the SF 120, the attachment will contain the following information:

(a) Average usage and downtime (hours per month) for the 12 month period immediately preceding the report. Include a narrative description or history of any repeated equipment failure.

(b) A list of compilers and other support software packages such as executive routines, plus any engineering drawings and maintenance manuals available with the equipment.

(c) Information regarding power, air-conditioning, and space requirements for a complete system of the type being reported as excess. Also, identify any unusual or special physical requirements.

(3) When the ADPE is classified or has been used for processing classified information, or is itself classified, security restrictions as specified in DOD Manual 4160.19-M, paragraph 20302C (8), and AR 380-380, apply. If ADPE cannot be declassified in accordance with AR 380-380, the reporting activity will indicate as a special footnote in block 18 on the SF 120 the degree of protection that must be maintained by the acquiring agency.

(4) Equipment and maintenance vendors require written notification by a prescribed number of days prior to discontinuance of leased equipment or maintenance services for GOE, as stipulated in the contracts. The using activity must ensure that the contracting agency submits the proper discontinuance notice to the vendors.

c. Minor items of excess ADPE may be reported by the DPI or contractor directly to DLA-DARO using and SF 120. If levels of command above the DPI have established management controls over minor ADPE (paragraph 6-5a(2)),

route SF 120s for this category of equipment through these commands to DLA.

d. Excess leased punched card machines equipment will not always be reported on SF 120s. The following special procedures will be applied:

(1) If the purchase price when new was less than $1,500, return the equipment directly to the vendor in accordance with contract provisions, without any requirement for excess reporting to USAISSSC.

(2) If the purchase price when new was $1,500 or more, report the equipment according to b above. Furnish copy of the lease termination notice with the SF 120, along with the name and phone number of the DPA or contractor representative responsible for disposition.

e. GSA has waived its 90 day screening period on excess ADPE that is considered obsolete. GSA defines obsolete as "All systems and machines manufactured prior to 1967, except Digital Equipment Corporation (DEQ), Hewlett Packard Corporation (HPC) and International Business Machines (IBM) 1403 Printers and 029 card punches. Included in the obsolete category are IBM 026 card punches, 056 card verifiers, and most other IBM punched card machines.

(1) A data field "OBSL STATUS" has been added to the Automation Resources Management System Data Base (ARMSDB) to identify obsolete ADPE. A value of "P" indicates that the equipment represented in that record meets the GSA definition of obsolete ADPE. For example there are over 100 IBM 1401s in the data base with the field "OBSL STATUS = P".

(2) DLA-DARO will assign a 60 day automatic release date (ARD) to reports of excess containing only obsolete equipment as identified in ARMSDB. Therefore, report excess obsolete equipment on separate SF 120s to obtain 60 days of screening.

(3) GSA will identify additional ADPE as obsolete. This information is readily available to MACOM and ARSTAF agencies reutilization focal points from their dial-up terminals.

6–5. Screening procedures.

a. For all major items of GOE or leased ADPE, and leased PCM with a new purchase price of $1,500 and over, forward the SF 120 to USAISSSC for final action. Intermediate levels of command (including ARSTAF or MACOMs) do not have the authority to resue these categories of ADPE without USACSC approval.

b. Upon receipt of SF 120s from DPA, ARSTAF or MACOMs will review them for accuracy and completeness.

c. In addition to reviewing SF 120s for accuracy, ARSTAF or MACOMs will screen their inventories to determine if it is advantageous to reutilize the equipment within the command according to policies in paragraph 6-3. During the screening process, commands should consider possible modification of the excess ADPE to effect model changes by adding or deleting features to improve the possibility of intracommand reutilization, especially to replace like equipment currently being leased.

d. SF 120s will be forwarded to Commander, USAISSSC, ATTN: ASB-TEA-P, Fort Belvoir, VA 22060-5456 via a letter of transmittal from the appropriate ARSTAF or MACOM. For each item on an accompanying SF 120 that is in "A5" or better condition, a statement is required from the ARSTAF or MACOM on the letter of transmittal to the effect that—

(1) There are like items on lease within the ARSTAF or MACOM and a DD 1149 accompanies the SF 120 to effect a transfer to replace like leased equipment;

(2) There are like items on lease within the ARSTAF or MACOM, but the equipment being excessed is not suitable to replace currently leased items. A statement as to why the excess equipment is considered unsuitable for the replacement of the leased ADPE will then be provided; or

(3) There are no like items currently on lease within the ARSTAF or MACOM. Note: Letters of transmittal, in which above statements are missing or such statements are not readily associated with each item of ADPE in "A5" or better condition, will be returned with the accompanying SF 120 to the ARSTAF or MACOM for correction.

e. On receipt of the SF 120, USAISSSC will screen the reported excess ADPE against known requirements within the Department of the Army (DA), to include searching the Army ADPE Inventory with a view toward replacing currently installed like-type leased equipment at activities outside the purview of the reporting ARSTAF or MACOM.

f. *USAISSSC must determine and document* that screening of available excess ADPE prior to buying major items of ADPE. The acquisition approval authority will file the documentation to support buying ADPE commercially.

g. In unusual circumstances it may be necessary to withdraw equipment or to change the availability date after the SF 120 has been submitted. The reporting activity will promptly advise any activity that had been designated to receive the ADPE that the equipment has been

withdrawn or that the availability date has been changed.

6–6. Acquisition of excess ADPE.

a. All requests for acquisition of excess major items of ADPE, regardless of source, must be approved by USAISSSC (ASB-TEA-P). Requisitions will be prepared on DD Form 1149 for excess DOD-controlled ADPE and on Standard Form 122 (Transfer extra excess personal property), for excess GSA-controlled ADPE.

b. Channels for submission of completed requisitions are from the DPI through the appropriate ARSTAF or MACOM to USAISSSC (ASB-TEA-P).

c. The ARSTAF or MACOM will review the transfer documents for compliance with the appropriate appendix and make corrections or return them to the originating activity for correction.

d. Telephone requests to hold excess items of ADPE may be made by DPI to DLA-DARO (AUTOVON 284-6317; commerical (202) 274-6317). Note that holds placed with DLA-DARO are good for 15 days. At the end of that time, the call hold may be extended for 15 days by calling DLA-DARO. The second call MUST be made as extensions are not automatic. DLA-DARO will not extend holds indefinitely. In practice, beyond the 30 days allocated above, DLA-DARO will transfer equipment to the first activity that submits a valid transfer document (DD 1140 or SF 122, as appropriate). Hence, it is incumbent on the requesting activity to forward transfer documents promptly through command channels to USAISSSC prior to expiration of the hold.

e. Requests for acquisition of excess minor items of ADPE will not be submitted through USAISSSC, but may be submitted directly to DLA on DD Form 1149 SF 122.

6–7. Shipping requirements. The following instructions will apply when GOE ADPE is shipped from one DPA to another, except when special arrangements are made by HQDA.

a. Holding agency. The reporting or holding agency will bear the costs of care and handling of excess ADPE pending shipment or final disposition.

b. Receiving agency. The receiving agency will only be responsible for direct costs incurred that are incident to the transfer, such as, packing, loading, and transporting. Overhead or administrative costs, equipment disconnect charges, and other charges not directly related to the transfer will not be included. The receiving agency will also be responsible for any movement or temporary storage required subsequent to the approved transfer date, including any rental costs for excess leased ADPE over the allowable free rental period in the applicable contract. Any questions regarding responsibility for cost in connection with ADPE reutilization will be resolved by USAISSC (ASB-TEA-P).

c. Packaging. It is the responsibility of the holding activity to prepare the equipment for shipment to satisfy carrier requirements, assure delivery in good condition, and be cost-effective. Packaging will be in accordance with vendor instructions, end-item specifications or data sheets. In the absence of such requirements, military levels A and B and commerical packaging, as applicable, will be done according to MIL-A-83995. Marking will be according to MIL-A-MIL-STD-129. Also, consider alternate transportation modes and specialized carrier equipment. For example, padded air ride vans may be an alternative to reducing packaging requirements and costs. Regardless of the mode or specialized transportation equipment, the following steps will be taken:

(1) All connecting cables, spare parts, engineering drawings, operating handbooks, and maintenance records will be included with the shipment. A copy of the most recent Army ADPE inventory printout showing all information reported for the ADPE under the provisions of AR 18-3 will be included.

(2) Internal preparation, consisting of cleaning, immobilization, blocking, and bracing will be done by technically qualified personnel in accordance with equipment specifications, operating manuals, or maintenance handbooks.

d. Discrepancies in shipment. If the ADPE is received in damaged condition or shipment is not complete, the receiving activity will report the discrepancy as prescribed in DOD 4160.19-M, paragraph 50204.

6–8. Final disposition of excess ADPE. The following procedures will be used to dispose of excess ADPE when it has been determined that all reuse possibilities have been exhausted.

a. Government-owned major items of ADPE. When processing the SF 120, DLA will establish an ARD. If approved transfer documents are not received by the DPA 21 days after the ARD, excess GOE will be turned in to the appropriate Defense Property Disposal Office (DPSO). Procedures in DOD Manuals 4160.19-M and 4160.21-M will be followed. The turn-in document will

be annotated with DLA case numbers and will bear the certification required by DOD 4160.19-M, paragraph 50401.

b. Leased ADPE. Leased ADPE will be reported as excess not later than 8 months prior to anticipated surplus release date. Prompt reporting of excess leased equipment is necessary to provide maximum opportunity for reuse and maximum protection from loss of accrued purchase credits. Unless specifically approved by USACSC, equipment will not be maintained on rental status merely to satisfy reutilization procedures. When leased equipment is to be used further by the Government and approved transfer documents from USACSC or DLA are received, the contracting agency of the releasing activity will immediately notify the vendor in writing of this fact, in accordance with the terms of the lease contract. Two copies of this correspondence will be forwarded to Commander, US Army Information Systems Software Support Command, ATTN: ASB-TEA-P, Fort Belvoir, VA 22060-5456, and one copy to the acquiring organization. On receipt of the copy of the letter, the acquiring organization's contracting officer will contact the vendor to negotiate the lease of the equipment.

6–9. ADPE reuse reporting requirements.

a. Intraservice reutilization of ADPE will be reported in accordance with DOD Manual 4160.19-M, chapter VI, as follows:

(1) Major items of excess ADPE. USAISSSC will furnish copies of intraservice transfer documents to Defense Logistics Agency, Headquarters, Alexandria, VA 22314.

(2) Minor items of excess ADPE. Any other controls established by major commands will be followed.

b. DPIs acquiring excess ADPE are responsible for reporting cost savings or cost reduction, as prescribed by regulation.

CHAPTER 7
AUTOMATIC DATA PROCESSING SHARING PROGRAM

7–1. General. This chapter establishes procedures for use of ADPR by participation in the Government-wide ADP sharing program. Managers will make efficient use of ADP resources by sharing the use of such resources with other Army and DOD activities and other Government agencies. This may be done only if the quality or security of mission-related support will not be degraded and, normally, without incurring additional nonreimbursed expense. Basic policies concerning ADP sharing are contained in AR 18-1. DPIs will participate if they are located within the continental United States (CONUS), Alaska, or Hawaii, unless an exemption is granted under paragraph 7-2.

a. For sharing, ADPR includes—

(1) General purpose ADPE, computer output microfilm (COM) equipment, PCM, and source data automation (SDA) equipment irrespective of use, application, or source of funding. This also includes ADPE built to Government specifications.

(2) Software (the totality of programs and routines used to extend the capabilities of computers, such as compilers, assemblers, narrators, routines, and subroutines).

(3) Personal services (management, systems analysts, programmers, operators, etc.).

b. ADP sharing is the provision of available ADPR by a DPI to another organization which the DPI does not have a primary mission responsibility to support. This includes sharing on a reimbursable or nonreimbursable basis.

c. The ADP sharing exchanges assist participants in the program to obtain ADPR through a nation wide information and referral system. The sharing exchanges will serve without charge as local points of contact, liaison, negotiation, and referral.

d. Army DPIs are authorized direct contact with ADP sharing exchanges to investigate acquisition of ADPR for short term temporary or emergency requirements. (See paragraph 7-3 for procedures.)

7–2. Exemptions to ADP sharing. The following are exempted from ADP sharing.

a. Analog computers, special design and special purpose, built or modified to Government design specification (including related devices), and ADPR integral to combat weapons system. Army tactical data system or tactical communication system.

b. Contract ADPR maintenance services. Acquisition of ADPR maintenance service is exempt from the ADP sharing program. ADPE maintenance services are governed by FPR 1-4.11.

c. ADPR controlled by organizations identified by the following DPI codes are exempt from ADP sharing: C131, E004, E005, U321, U422, U424, U428, W001, W013, W014, W024, W031, W032, X001, Z001.

Note: Exemptions granted prior to May 1969 are rescinded.

7–3. ADPE obtained through the ADP sharing program or commercial sources. The following procedures will be used by DPIs in participating in the program as recipients in ADPE sharing arrangements.

a. Army organizations will attempt to satisfy their approved ADPE requirements by screening resources of other Army agencies in their vicinity. If the result of the screening is unsuccessful, the requirements will be referred to the appropriate regional ADP sharing exchange (see appendix H for list) for assistance in locating suitable Federal ADPR. Requests for assistance may be made by mail, telephone, or personal contact. GSA Form 2068, (Request for ADPE Services), and Attachment A, FPMR temp Reg E-42 will be used for mail requests. Forms are available from the ADP sharing exchanges.

b. The ADP sharing exchange will, if successful in locating the ADPR needed, assist the requesting agency in making the necessary negotiations for sharing. However, the actual arrangements with respect to time scheduling, cost, staff assistance, and so forth must be mutually agreed on between the requesting and sharing agencies.

c. Notification by an ADP sharing exchange that the requested services are not available from the Government resources will be made to the requesting agency. In the absence of such notification from GSA and appropriate approval authority, the procurement of ADPE time and related services from commercial sources is not authorized and requestors may not contract for such services. In any event, these approvals do not constitute procurement authority to acquire ADPR from a sole source.

d. Sharing arrangements between Army agencies need not be arranged with a GSA office

or sharing exchange. If the two agencies belong to different MACOMs, then the sharing agreement must be approved by each MACOM.

e. DPIs acquiring ADPR or ADP-related services from a commercial source providing through the sharing program must report this information as stated in paragraph 7-7.

7–4. Providing services through the ADP sharing program.

a. The sharing of a DPI's ADPR with another organization must not compromise security or have an adverse impact on applications for which the ADPR were justified, or on other Army applications subsequently prescribed or approved for the DPI. Additional personnel or ADPE will not normally be authorized based upon additonal usage due to sharing, but when justified must be approved in accordance with AR 18-1.

b. The priority among organizations for sharing purposes will be in the following order:

(1) Army activities the DPA has established to support as a primary mission.

(2) Other Army activities.

(3) Other DOD agencies.

(4) Other Federal Government agencies.

(5) State and local governments.

c. Sharing arrangements must always be subject to cancellation or rescheduling if available time is subsequently required to support the DPI's workload. However, when ADP sharing requirements of a recurring nature results in formal support agreements, these agreements cannot be unilaterally terminated. There must be mutual consent of the parties involved. Prior to termination of support agreements, alternative methods of handling the sharing-imposed workload must be identified.

d. The DPI providing ADP sharing support will determine whether it is more economical and feasible to use leased or owned equipment if both are available to fulfill a sharing request of another agency.

e. A DPI is not authorized to charge for ADPE processing time provided to another Army organization if the ADPE used is staffed for and rental or maintenance expenditures have been budgeted. A DPI at its option may request reimbursement in accordance with the provisions of AR 37-49 for unfunded extra use or maintenance charges resulting from the sharing use. Requests to another Army organization for reimbursement of ADP sharing-related expenses (e.g., operator wages (except overtime expended), overhead costs, and small quantities of supplies) are not authorized.

f. DPIs providing services through the sharing program are required to report this information as stated in paragraph 7-7.

7–5. ADP support to nonappropriated fund activities. DPIs will provide ADP support to nonappropriated fund (NAF) activities as specified in this regulation.

a. Revenue producing NAF activities must be self-sustaining with respect to operating expenses. Therefore, any ADP service in support of operational-level NAF functions that produce revenue will be fully reimbursed.

b. Membership association and special NAF instrumentalities may be supported on a reimbursed as follows:

(1) Reimbursement will include the pro rata actual cost of operating personnel, equipment, and supplies used to provide the service. ADPE costs will be based on maintenance costs for GOE and lease cost for leased equipment. Personnel costs associated with initial ADP system design, programming, and subsequent system redesign or improvement will not be included.

(2) Billing and collecting will be monthly according to procedures established with the servicing finance and accounting office.

(3) This support is reportable as ADP sharing in accordance with paragraph 7-7.

c. NAF welfare activities and functions in support of command-level NAF responsibilities will be supported without reimbursement on an equal basis with all other appropriated fund organizations.

7–6. Support to State or local government.

a. ADP support may be provided to State and local governments or their agencies and instrumentalities, including schools, if the following requirements are met:

(1) A written request of a State government or one of its political subdivisions is submitted to the ARSTAF or MACOM.

(2) Certification is furnished by the requesting agency that such services will be required for no more than 1 year, and cannot be reasonably and promptly procured through ordinary business channels.

(3) The requesting agency agrees to reimburse the Federal Government for the ADP services provided. Reimbursement will cover both direct costs (including wages) and indirect costs.

(4) Support to such agencies cannot be used as a basis for justifying additional manpower, equipment, or contract services.

b. Invoices for reimbursement will be forwarded to the servicing finance and accounting office for collection.

c. ADP support provided State and local governments will be reported in accordance with paragraph 7-7.

7–7. ADP sharing program reporting requirements. DPIs providing ADP-related services under the ADP sharing program either on a reimbursable or nonreimbursable basis or receiving these services from a commercial source must submit a GSA Form 2068A (RCS 1106-GSA-QU) (Quarterly Report of ADP Service, Provided to Another Organization or Obtained from a Commercial Source). This requirement is restricted to DPIs located in CONUS, Alaska, and Hawaii. Forms are available from the ADP sharing exchanges.

a. Each report will be submitted in duplicate directly to the appropriate GSA ADP sharing exchange by the 15th day after the close of each calendar quarter in which services were provided or received. An additional copy will be forwarded to the Commander, USAISSSC, ATTN: ASB-TEA, Fort Belvoir, VA 22060-5456.

b. All types of ADP services that require submission of GSA Form 2068 are reportable. These include "unbundled services," which are previously provided with ADPE at no additional cost, such as—

(1) ADPE usage.

(2) Program sharing.

(3) Programming and systems analysis and design services.

(4) Conversion and implementation planning.

(5) Installation evaluation and improvement studies.

(6) ADP training, whether conducted onsite or elsewhere.

(7) Systems engineering services.

(8) Consultation services or feasibility studies.

(9) Data conversion (e.g., card punch and verify, key-tape or disk, OCR) services.

(10) Software services.

(11) Time sharing services.

(12) Magnetic tape to microfilm (COM) processing.

c. ADPE usage data related to ADP sharing must also be included in usage reports required by AR 18-3.

7–8. Federal data processing centers.

a. An FDPC is located at each GSA regional office. Additional FDPCs may be established where feasibility studies indicate a need. Mutually satisfactory arrangements for reimbursing the FDPC for services rendered will be arranged between the requesting agency and the FDPC.

b. Services available from FDPC include ADPE time, data conversion, software, and personnel such as programmers and systems analysts capable of performing detailed ADP system design. GSA regional ADP sharing exchanges periodically issue "ADP sharegrams" which announce the availability of specific services and associated costs. Copies of these documents may be obtained by contacting from GSA regional agency services coordinator or by submitting GSA Form 457 to: General Services Administration (8BL), Centralized Mailing Lists Services, Bldg. 41, Denver Federal Center, Denver, CO 80225.

c. If the requirements of an agency for services available from FDPC have not been satisfied through the procedures in paragraph 7-3, the agency should contact the appropriate GSA regional ADP sharing exchange shown in appendix H for assistance.

7–9. Release of software related materials to others.

a. Computer system descriptions, programs, and documentation developed either by Army personnel or under Army contract are not considered records, and therefore are not required to be made available to the public under the Freedom of Information Act (FOIA) (5 USC 552). Release will not be made to organizations or individuals outside the Federal Government, except when found to be in the best interests of the Government. However, information created, produced, or maintained by means of an ADP system is considered as records within the meaning of the FOIA, and such release will be in accordance with AR 340-17 and AR 340-21.

b. The release of appropriate Army programs and documentation to computer user groups and other like activities in which the Army participates must be approved by the ARSTAF or MACOM AMO procedures must be written to ensure that software related materials are not released by any member of the DPI without a written approval of the ARSTAF or MACOM AMO.

(1) It must be assured that the release of the requested materials will not result in competition with products offered by commercial firms. In situations where doubt exists, the request will be referred to HQDA(DACS-DI).

(2) The ARSTAF or MACOM AMO may approve requests from other Federal Government agencies, State and local governments, educational institutions, or their representatives for release of software-related materials developed and maintained, which are within the MACOM-approved threshold.

(3) Requests from commerical firms not representing those agencies in (2) above may be disapproved at MACOM level. However, these requests for which the MACOM recommends approval must be referred to HQDA(DACS-DI) for final action.

(4) All requests for release of software-related materials pertaining to systems above ARSTAF or MACOM thresholds will be referred directly to HQDA(DACS-DI) for final action.

(5) In all cases, the requesting agency will assure that the requested materials will not be used for any purpose other than that requested; and under no circumstances will the materials be used in any other manner or released to any other organization or individual without prior permission of the approving agency. A statement to this effect must accompany any request for release.

(6) Security procedures must be observed and any proprietary rights must be protected when considering the release of any materials under the provisions of this paragraph.

(7) The release of ADP system descriptions, programs, and documentation is subject to reimbursement for the fair market value. Considerations other than monetary reimbursement may be appropriate, as in the case of program-sharing arrangements with other members of user groups. However, in all cases where products are furnished without full fair market value reimbursement, guarantees must be obtained against their resale or publication for profit.

(8) The release of any such materials must include a disclaimer releasing the Army from any liability for its use by others.

APPENDIX A
REFERENCES

Section I. Required Publications

AR 18–1, Army Automation Management. (Cited in paras 1-6, 4-9f, 6-3f, 7-1, and 7-4a.)

AR 18–3, ADP Management Information System. (Cited in para 2-4c, 4-4b(1), 6-9c, and 7-6c.)

AR 18–7, Data Processing Activity Management, Procedures, and Standards. (Cited in para 1-6.)

AR 18–22, Army Inventory of Data Systems. (Cited in para Appendix A-4.)

AR 335–15, Management Information Control System. (Cited in para 3-2b.)

AR 340–21, The Army Privacy Program. (Cited in para 7-9a.)

AR 380–380, Automated Systems Security. (Cited in para 2-1c, 2-2b(6), 2-2c, 2-3a, 3-5c(3), 4-4b(3), 5-4, 6-6b(3).)

AR 420–90, Fire Prevention and Protection. (Cited in para 5-11, and appendix B-3.)

AR 530–4, Control of Compromising Emanations (U). (Cited in para 5-8g.)

PAM 18–100, Army Automation Economic Analysis. (Cited in para 3-8b.)

PAM 18–122, Army Automation DPI Site Selection and Site Preparation. (Cited in para 5-12.)

PAM 18–127, Army Automation Computer Performance Measurement and Evaluation. (Cited in para 3-6g.)

PAM 18–130, Army Automation Continuity of Operations Plan. (Cited in para 2-2d.)

PAM 18–211, Technical Documentation. (Cited in para 3-5c(2)).

PAM 18–220, Training Management for ADP Systems. (Cited in para 2-3b).

TB 530–1, Operations Security. (Cited in para 5-8g.)

DAR 24–205.8

DOD 4160.19–M, 4160.21-M, Defense ADPE Reutilization Manual. (Cited in para 6-1, 6-3b(1)(c), 6-4a, 6-4d, 6-5(1)(1), 6-5c, 6-6b(3), 6-9d, 6-10a, 6-11a.)

FIPS–PUB–31, Guidelines for Automatic Data Processing Physical Security and Risk Management. (Cited in para 5-9.)

MIL–A–83995, Automated Data Processing Equipment (Major Components) (Packing Of). (Cited in para 6-9c.)

Section II. Related Publications

A related publication is merely a source of information. The user does not have to read it to understand this pamphlet.

AR 37–49, Budgeting, Funding, and Reimbursement for Base Operations Support of Army Activities.

AR 40–5, Health and Environment.

AR 310–25, Dictionary of United States Army Terms.

AR 340–17, Release of Information and Records from Army Files.

AR 340–18, The Army Functional Files System. (Cited in para 4-2c.)

AR 385–30, Safety Color Code Markings and Signs.

AR 420–43, Electrical Services.

NFPA 75, National Fire Protection Administration.

DOD 4160 21.M–1, Defense Demilitarization Manual. (Cited in para 6-10a.)

TB 18–XX series, Army Automation (various informative subjects).

DA PAM 18–4, Army Automation Data Processing Installation Review/Evaluation Checklist.

Section III. Department of Defense Publications

DOD Reg 5200.1–R, Information Security Program Regulation.

DOD STD 7935, ADS Documentation.

DOD Dir 5200.28, Security Requirements for Automatic Data (ADP) Systems Processing.

DOD Man 4160.19-M, Defense ADPE Reutilization Manual.

Section IV. Other Publications

FIPS PUB 31, Guidelines for Automatic Data Processing Physical Security and Risk Management.

FIPS PUB 21–1, COBOL.

FIPS PUB 31, Guidelines for Automatic Data Processing Physical Security and Risk Management.

FIPS PUB 41, Computer Security Guidelines for Implementing the Privacy Act of 1974.

Above Federal Information Processing Standards Publications (FIPS) can be obtained from: National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Section V. Prescribed Forms

DA Form 4616–R

DA Form 4614–1–R

SF 122

SF 277

Section VI. Referenced Forms

DA Form 200

DA Form 4737–R

DA Form 4738–R

DA Form 4752

DD Form 1149

DD Form 1851

SF 120

APPENDIX B
HQDA POINTS OF CONTACT FOR ADP MANAGEMENT RELATED SUBJECTS

B–1. General ADP management policy (including all subjects not covered in succeeding paragraphs).

Commander
USISSSC
ATTN: ASB-TEE-MR
Ft Belvoir, VA 22060-5456

Phone: Commercial (703) 664-5475
AUTOVON 354-5475

B–2. General AMO Policy (AR 18-1).

HQDA (DAIM-PS)
WASH DC 20310-0700

Phone: Commercial (202) 695-2705
AUTOVON 225-2705

B–3. ADPE Procurement.

Commander
USAISSAA
ATTN: ASW-SDS
Alexandria, VA 22331-0700

Phone: Commercial (202) 325-9525
AUTOVON 221-9525

B–4. ADPE Reporting (AR 18-3).
Army Inventory of Data Systems (AR 18-22).
ADPE Reutilization (PAM 18-125).

Commander
USISSSC
ATTN: ASB-TEA-P
Ft Belvoir, VA 22060-5456

Phone: Commercial (703) 664-6471
AUTOVON 354-6471

B–5. ADP Sharing (PAM 18-125).

Commander
USAISSSC
ATTN: ASB-TEA
Ft Belvoir, VA 22060-5456

Phone: Commercial (703) 664-1652
AUTOVON 354-1652

B–6. ADP Standards Program.

Commander
USAISSSC
ATTN: ASB-TES
Ft Belvoir, VA 22060-5456

Phone: Commercial (703) 664-4411
AUTOVON 354-4411

B–7. Waiver from mandatory water sprinkler system in DPI.

Commander
USACE
HQDA (DAEN-ZCF-B)
ATTN: Mr. Bruce Park
Washington, D.C. 20314-XXXX

Phone: Commercial (202) 272-0866
AUTOVON 285-0866

APPENDIX C
FIRE SAFETY PRACTICES

C–1. The General Service Administration's Federal Property Management Regulation 41 Code of Federal Regulations (CFR) Ch 101 states, in paragraph 101-36.703, guidelines concerning fire safety practices are provided in paragraph 101-20.109 and in the National Fire Prevention and Control Administration's Handbool RP–1, Standard Practice for the Fire Protection of Essential Electronics Equipment Operation.

C–2. The National Fire Prevention and Control Administration's Handbook RP–1 is recognized in the Federal property management regulations and is used by Federal agencies as the guide for the fire protection of essential electronics equipment. This handbook recommends that structures used to house equipment will be fire resistant or of noncombustible construction. Where deviation is necessary, the structure must be completely protected by an automatic sprinkler system. Chapter VII, paragraph 702-2, states, "Automatic sprinkler protection is required for all electronic equipment and record storage areas . . . " Paragraph 706-1 requires that wherever a Halon 1301 system is used, it will be in addition to the requirement for automatic sprinklers.

C–3. AR 420–90, chapter 4, states that fire protection for electronic data processing systems will be in accordance with National Fire Protection Association (NFPA) Standard 75, with the additional requirement that new installations of these systems will not be located in combustible buildings.

C–4. NFPA Standard 75 requires that computer area to be housed in a fire resistant, noncombustible or sprinklered building. Also, an automatic sprinkler system will be provided when the computer room contains, or the operation involves, a significant quantity of combustible materials.

C–5. A Fire Protection Computer Room Checklist is provided at Figure C-1 which is based on the information above. This is to be used in determining each installation's requirement for automatic sprinkler systems. If they are not required, the completed checklist and a request for waiver from the mandatory water sprinkler system must be forwarded to HQDA ATTN: (DAEN-MPO-B), WASH DC 20314.

C–6. The following guidance is provided for Army planners considering fire protection. Halon is to suppress surface fires and not to extinguish class A fires which are deep embedded flames which might be present in paper goods. Halon is also used to avoid water damage from sprinkler systems. Other methods to avoid excessive water damage is to use a dry-line system which allows a manual override to turn the system off after the alarm has been sounded, but before water has traveled thru the pipes and sprayed into the suspected fire area. Another method is to use "on/off" sprinkler heads which emit sprayed water into the fire area but which shut off after a fire is extinguished and the temperature drops. The vast body of knowledge and guidance concerning fire safety is slanted toward the private sector which may be released of financial loss due to insurance. Consideration should be given to the fact that US Government facilities are self-insured and that the US Army does have a mission as a military service and may have a mission in national emergencies. These considerations are not factored in most published guidance hence Army units must plan accordingly. Hence recommendations by Army inspecting units usually require more stringent protection than private publications require.

1. Is the facility operated and supervised 24 hours each day? If not, what are the hours of supervised operation and unattended operation?

2. Does a system exist that will transmit a signal to a fire station or other continually manned location?

3. What is the construction of the building that houses the computer room?

4. What is the construction and floor space of the computer room and related areas?

5. Within the computer room, are combustible support materials limited to a 1-day supply?

6. Does a firewall separate the computer room from the main building?

7. Are there fire cutoffs that isolate tape storage areas?

8. What fixed fire prevention and protection systems are currently installed?
9. What are the types, sizes, and locations of installed portable fire extinguishers?
10. What is the replacement cost of the electronic equipment within the computer room?
11. Is this equipment in short supply?
12. Is this equipment highly complex?
13. Does this equipment require and excessive lead time to replace?
14. Are other facilities available to perform the mission during emergency situations?
15. Is the computer room located in a GSA-controlled space, which requires sprinkler systems as a condition of occupancy?
16. Are there any nonmetallic, sheathed, exposed cables used under raised floor areas that function as air plenums?

APPENDIX D
DEFINITIONS OF TIME CATEGORIES

The following definitions and methods of computation will be used for ADPE utilization time categories.

D–1. Wall-clock times. Total accountable time is based upon actual time measurement (24-hour wall-clock), generally without regard to internal central processing unit (CPU) or peripheral device activity. Total accountable time consists of 24 hours a day, 7 days a week, for a total of 720 hours for a 30-day month. Total accountable time is applicable only to PCM and ADPE systems which operate in a serial mode. This time category is divided into maintenance-related downtime, system idle time, time provided other agencies, and in-service time. Wall-clock accounting for maintenance-related downtime and system idle time are applicable to both serial and multiprogramming models of operation, although in the latter mode, the concept of total accountable time is not used.

a. Maintenance-related downtime. The sum of the following categories, in which the ADPE is not operable due to scheduled or emergency maintenance or similar causes.

(1) Preventive maintenance (PM) time. That amount of time the system is dedicated to ADPE maintenance specifically intended to prevent hardware faults from occurring during subsequent operation. Usually performed by an engineer (contract or government) on a scheduled basis in accordance with the manufacture recommendations. This time does not include partial PM, where individual items of an ADPE configuration are placed out of service for operator-level maintenance without disabling the system (e.g., cleaning of heads on individual tape drives or vacuuming lint from filters).

(2) Remedial maintenance (RM) time. Time used for corrective maintenance of the ADPE from the time the malfunction of the ADPE from the time malfunction occurs until the ADPE is returned to service ready for use. RM is defined as maintenance of an emergency nature specifically intended to eliminate an existing hardware fault and to facilitate continued production work. Maintenance to correct a fault thay may be deferred until scheduled PM time without disrupting operations will be counted as PM. RM time will not be accumulated for a complete ADPE configuration if the system is not disabled while individual items of ADPE are disabled or undergoing RM. Maintenance contracts for particular systems on items of ADPE may have terms and conditions which define RM in ways that differ from this regulation. When this occurs, DPAs will adhere to the provisions of the maintenance contract.

(3) Executive software modification time. Time used for the installation, modification, or repair of system executive software, operating systems, or utility programs, whether on an emergency or a routine scheduled basis. This category includes local installation of operating systems for DA standard systems.

(4) Other downtime. Time during which the ADPE is inoperable due to causes other than those listed above. These include modifications to the hardware or physical facility, movement or relocation of ADPE, outage due to environmental or electrical causes, etc.

b. System Idle time. The sum of idle time system is scheduled for operation; and idle time system is not scheduled for operation during which the ADPE is operable but is not being used for any active task.

(1) Idle time-system scheduled for operation. Idle time experienced while the system is operational and staffed, but no work is being performed for any reason. This category includes time the ADPE may be in a standby or wait state awaiting real time or teleprocessing tasks, and time the total system is in a wait state between batch jobs. This category is also applicable to individual partitions of a fixed-partition multiprogramming computer system.

(2) Idle time-system not scheduled for operation (residual time). Idle time during which the ADPE is operable but not scheduled for operations or maintenance. Residual time is further classified as residual time available and residual time not available to other agencies.

(a) Residual time available to other agencies. Time during which the ADPE could be made available to other agencies for sharing.

(b) Residual time not available to other agencies. Time during which the ADPE could not be made available to other agencies for sharing due to one of the following reasons: Security restrictions, special purpose ADPE not suitable for sharing; and ADPE dedicated exclusively to educational applications.

c. Time provided other agencies. Time during which ADPE is being used to do processing in support of agencies other than regular users, on a sharing or COOP basis. For accounting purposes, this time should be further subdivided into reimbursable and nonreimbursable categories. This includes time per partition during which processing is being accomplished in support of other agencies for ADP sharing or contingency purposes.

d. Time received from other agencies. In-service time during which ADPE of another agency is being used to do processing in support of regular DPA users on a sharing or contingency (COOP) basis. The time is to be collected and reported under the same time subclassifications as in service time.

e. Inservice time. In a serial mode of operation and for punched card machines, inservice time is that period of time during which the ADPE is operating and assumed to be yielding correct results, or is being prepared for another operational run. It is the sum of effective production, lost production, program development, and job setup times.

(1) Effective production time. That part of inservice time which is used in actively producing desired results, and cannot be classed as development time. This category also includes spooling, "load and go" program compilation and operation, and other operating ADPE tasks which are production oriented.

(2) Lost production times. That part of inservice time which would otherwise be effective production but represents time lost due to human mistake, equipment malfunction or other fault or error of any type. Only the segment of ADPE production time which is of no value in obtaining the desired result is counted as lost production time. Example: A three-hour production run is discontinued after one hour because of a program error. When the error is corrected, the job is restarted and processed successfully. The lost production time is one hour. For internal DPA management purposes, this category will be further subdivided to isolate and monitor specific major causes of ADP resource wastage. Principal subcategories include: ADPE malfunction, program or run book error, operator mistake, scheduling or input/output (I/O) control error, user input error, defective materials (e.g., bad tape), environmental failure (e.g., power or air-conditioning fluctuations), and operating system malfunction.

(3) Program development time. That part of inservice time that is used for development of new or modified applications programs or systems. It includes for example: program compilation, testing and debugging, linkage editing, and program library updating. In addition, this category will be used to account for time expended in installing DA or MACOM standard application system change package/interim. Lost time due to malfunctioning SCP/EUCP will be considered lost production due to program error.

(4) Setup time. Time the ADPE or CPU partition is in a wait state while manual operations prepartatory to program execution are being performed, such as mounting or dismounting tapes and disk packs, loading and unloading I/O devices, etc. Setup time is applied to the job in which the setup tasks are being performed. Wait time between jobs that are not devoted to setup is classed as idle time.

D–2. Meantime between failures. An indication of equipment operation between successive failures. These periods, when statistically averaged, become the meantime between failures for a given ADPE resource.

D–3. Elapsed times (by partition or initiator). The categories below are based not upon activity or inactivity of the total ADPE system (as are the preceding wall-clock categories) but upon the ability of more advanced computer configurations to perform more than one job or task at a time using fixed partitions or allocated regions of memory. This ability significantly complicates the function of managing these assets effectively. The following time classifications will be used for computers operating in the multiprograming mode, in addition to the classification in D-1 above.

a. Operating time

Analogous to inservice time, and applied to each available fixed partition. Operating time per partition per day cannot exceed 24 hours, and includes—

(1) Effective production time.
(2) Lost production time.
(3) Program development time.
(4) Setup time.

(5) Spooling time. That time during which data is entered or emitted through an I/O device (e.g., card reader or line printer) and during which the partition is not processing main-line application programs. Also includes time occupied in reformatting and writing output data to magnetic tape or other media for acceptance into office systems (e.g., AUTODIN, computer output microfilm (COM), or media for the continuous form printer).

b. Time provided to others. Time per partition during which processing is being accomplished in support of other agencies for ADP sharing or contingency purposes.

c. Time received from other agencies. Time per partition during which ADPE of another agency is being used to do processing in support of regular DPA users, on a sharing or contingency (COOP) basis. This time is to be collected and reported under the same time subclassifications as in a above.

d. Partition active time. Total time per partition during which jobs were being processed, computed by adding operating time, and time provided to others for each partition.

e. CPU active time. The total amount of elapsed time used by the CPU in actively performing work on one or more jobs or tasks. It is computed as the summation of the times when one or more of the partitions holds tasks being executed, based upon "OR" sampling on a periodic basis across all partitions. This time category cannot exceed 24 hours in any accounting day.

D–4. Utilization measurement in large variable-task systems. Due to the high speed, memory size, and large number of peripheral devices available, most large-scale computer systems are capable of executing several programs with varying requirements at the same time. The common practice in utilizing these systems for batch processing is to load and process in priority sequence as many programs as working memory will hold and peripheral devices are able to service at any one time. The efficiency of this type of computer system cannot be measured in terms of any single resource, but must be obtained through an analysis of several factors simultaneously. It is necessary to make use of the computer system's built-in accounting data collection package, sometimes called "logger," to determine how each definable segment of the ADPE is utilized during the time that it is operational. The information derived from logger statistics can be used for charge-back to users and for effective management of the ADPE. The following are the most significant measures of effectiveness in a variable-task computer system, whether operating in batch or online (terminal) modes:

a. Processing elapsed time. The total time (normally in minutes) the job was resident in memory for processing. For management purposes this should be contrasted to the CPU seconds required to process the job. Significant differences between the two times may be caused by the following factors which may be identified as problem areas:

(1) Job is awaiting the execution of any other job assigned to a higher priority class.

(2) Job is awaiting satisfaction of an I/O request for peripheral device usage.

(3) Job is awaiting the intervention of an operator to make a console reply, mount a tape, etc.

b. Core utilization. Normally it is possible to identify both the amount of core requested by the programmer and the amount actually used by the program during execution. For charge-back purposes the amount of core requested in terms of the elapsed time of job execution is normally computed. Inefficient use of core (especially, more core requested than used) is a significant operations management problem area.

c. I/O accesses. The number of times the job received I/O servicing. For management and charge-back purposes, I/O accesses should be further subdivided by type of peripheral device and a measure (length of time) given for each (e.g., tape reads and writes, lines printed, cards read, disk seeks and tracks used, etc.).

d. Virtual memory paging. For virtual memory machines, the number of pages of program code moved between core and secondary memory and the rate at which this occurs are significant management indicators relating to program efficiency and adequacy of core size.

e. Terminal response time. For ADPE systems with online terminals attached, response time (in seconds) is the delay between completion of a user query and the CPU's initiation of response. It is a measure of system degradation, often caused by insufficient memory availability, internal task priority settings, poor communications software of links, etc. Terminal response time is a key indicator of user satisfaction and should be closely monitored.

GLOSSARY

Section I. Abbreviations

ADP—Automatic Data Processing

ADPE—Automatic Data Processing Equipment

ADPR—Automatic Data Processing Resources

ADS—Automated Data System

AMO—Automation Management Office/Officer

ARMSDB—Automation Resources Management System Data Base

ARSTAF—Army Staff

BOT—Beginning of Tape

CONUS—Continental United States

COOP—Continuity of Operations Plan

CPE—Computer Performance Evaluation

CPU—Central Processing Unit

DA—Department of the Army

DB—Decibels

DLA—Defense Logistics Agency

DPA—Data Processing Activity

DPI—Data Processing Installation

DPSO—Defense Property Disposal Office

EOT—End of Tape

EPM—Extended Period of Maintenance

FC—Foot candle

FDPC—Federal Data Processing Center

FE—Field Engineer, computers maintenance

FIPS PUB—Federal Information Processing Standards Publication

FPR—Federal Procurement Regulation

FPMR—Federal Procurement Management Regulation

GOE—Government Owned Equipment

GSA—General Services Administration

HASP—Houston Automatic Spooling Program

HP—Hewlett Packard Corporation

HQDA—Headquarters, Department of the Army

HZ—Hertz

IAS—Immediate Access Storage

IBM—International Business Machines

I/O—Input/Output

MACOM—Major Army Command

MTBF—Mean Time Between Failures

MTMC—Military Traffic Management Command

NAF—Non-Appropriated Funds

NEC—National Electrical Code

NFPA—National Fire Protection Administration

OCR—Optical Character Reader

OEM—Original Equipment Manufacturer

OF—Optional Form

OMB—Office, Management and Budget

PAM—Pamphlet

PCM—Punched card machines or plug compatible machinery

PM—Preventive Maintenance

PPM—Principal Period of Maintenance

RM—Remedial Maintenance

SDA—Source Data Automation

SF—Standard Form

SOP—Standing Operating Procedures

±—Plus or Minus

Section II. Terms

1. Automatic Data Processing Equipment. Automatic data processing components and the equipment systems created from them, regardless of use, size, capacity, or price, that are designed to be applied to the solution or processing of a variety of problems or applications. Whether general purpose or special purpose, Government-owned or leased, ADPE includes computer systems, central processing units, accessorial and auxiliary equipment, peripheral equipment, and punched card machines. Definition of ADPE applies regardless of the federal supply class (FSC) under which originally procured. More specifically, whether general purpose or special purpose, government-owned or leased, this definition of ADPE includes—

a. Digital, analog, or hybrid computer equipment. This includes equipment when integral to larger items of equipment not normally considered ADPE, such as when operating in an auxiliary mode to the functions of the larger items (e.g., "process control" computers in weapons systems, laboratory systems, etc.)

b. Auxiliary or accessorial equipment such as plotters, communication terminals or modems, tape cleaners or testers, and source data automation equipment (optical character recognition equipment, computer output microform equipment, paper tape typewriters, magnetic card or tape cartridge typewriters, and similar equipment used as data acquisition devices etc.). This equipment is used in support of digital analog, or hybrid computer equipment, either cable connected, voice connected, or self-standing, and whether selected or acquired with a computer or separately.

c. Government-owned punched card machines used with or independently of digital, analog, or hybrid computers.

d. Supplies peculiar to ADPE operations (e.g., storage cabinets, magnetic tape, disk packs, tape carts and racks).

2. Computer performance evaluation. A specialty that concerns itself with the efficient use of computer resources.

3. Federal Data Processing Center. A data processing center operated either by GSA or by another agency under delegation from GSA, performing a variety of data processing and related services for two or more federal agencies.

4. Major item of ADPE. Any item of ADPE that is NOT considered either disposable in nature or an accessory item according to the definitions under minor item of ADPE above, is considered a major item of ADPE for reutilization purposes.

5. Minor item of ADPE. All of the following are considered to be minor items of ADPE for reutilization purposes.

a. Disposable supplies such as magnetic tapes, paper, floppy disks, PCAM boards and wires, and other expendable items.

b. Accessorial supplies peculiar to ADPE operations such as storage cabinets, disk packs, tape carts and tape racks, and other accessory items.

6. Remedial maintenance. Maintenance performed by government or contractor APDE maintenance personnel to eliminate an equipment fault that is performed as required on an unscheduled basis. Faults that do not disable or seriously degrade a computer from operation and may be deferred to the next scheduled PM period for correction normally are not included in RM computations.

7. Retry. Action whereby computer operators continually make attempts to start computer devices when they do not operate the first time. Performed in the expectation that some electronic/mechanical connection will be made on the next attempt and hence the device will then work.

By Order of the Secretary of the Army:

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Chief of Staff

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